# IN THE UNITED STATES DISTRICT COURT
## FOR THE NORTHERN DISTRICT OF GEORGIA
### ATLANTA DIVISION

DONNA CURLING, ET AL.,     )

     )

     **Plaintiffs,**     )

     )     **CIVIL ACTION**

 **vs.**     )

     )     **FILE NO. 1:17-cv-2989-AT**

BRAD RAFFENSPERGER,     )

 ET AL.,     )

     )

     **Defendants.**     )

## PLAINTIFFS' BRIEF
## ON GEMS DATABASE DISCOVERY

Plaintiffs jointly submit this brief in response to the questions raised in the June 28, 2019 telephone conference relating to the joint discovery dispute initiated by the Coalition Plaintiffs (Doc. 416) relating to the production of GEMS databases. As explained below in Part I, the GEMS databases should be produced immediately without restriction because they are highly relevant and not confidential. State Defendants' counsel conceded this point during the June 28 teleconference, emphasizing that the GEMS databases themselves provide the "roadmap" that needs to be analyzed to identify flaws or vulnerabilities in the GEMS system. (June 28, 2019 Hearing Tr. 23:4-9, attached as Exhibit A.) As

explained in Part II, production of reports generated from the GEMS databases,

without the GEMS databases themselves, would be insufficient because reports

will not disclose defects in the underlying database configurations.  As explained

in Part III, the production of the GEMS databases is separate and distinct from the

more complex production of images of the GEMS servers and should precede that

production.  The GEMS databases do not implicate the security concerns

Defendants have raised regarding the GEMS servers and thus do not warrant the

sort of security measures discussed for the servers.  Neither does production of the

databases involve anything like the process for producing images of the severs.

The GEMS databases can—and should—be produced immediately on discs or

hard drives.[1]  There is no cause for further delay, which already has prejudiced

Plaintiffs' ability to prepare for the July 25-26 hearing.

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[1] To expedite the production of the GEMS databases as a critical first step in the analyses needed here, Plaintiffs focus here on the production of those databases rather than the forensic images of the GEMS servers.  Plaintiffs are prepared to meet and confer further with Defendants further regarding the process and reasonable security measures for production of the images.  If the parties cannot resolve that dispute, they will return to the Court for resolution.  Obtaining the GEMS databases now likely will help resolve or at least narrow that dispute and make the issues regarding that production less abstract.

## I.   THE GEMS DATABASES SHOULD BE PRODUCED WITHOUT RESTRICTION

Plaintiffs seek immediate production of electronic copies of the GEMS

databases for the November 6, 2018 election that the Secretary prepared for and

transmitted to each Georgia county, and the corresponding GEMS databases that

the Secretary received from each county after the election.  (Doc. 416-1 at page

6).[2] This production should be prior to, and separate from, the more complicated

and sensitive production of the forensic images of GEMS servers.  Production of

the GEMS databases first—while incomplete for the analyses needed in this case—

will allow valuable (but far less expensive and time consuming) discovery to

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[2] Plaintiffs seek pairs of GEMS databases in the Secretary possession for each of the 159 Georgia counties: the Secretary's copies of the databases that the Secretary sent to the counties, and the Secretary's copies of the databases that the counties returned.  In discussions with the Secretary's counsel during the June 28, 2019 telephone conference, Plaintiffs suggested reducing the number of counties to 25. The Secretary, however, explained that their objection to producing the databases is confidentiality regarding their structure, not burden, and thus there is no distinction between producing the database for one county versus all 159.  June 28, 2019 Hearing Tr. 28:8-15 ("I think the important piece is we don't see a distinction between 25 and the entire database because our concern is not the amount").

Plaintiffs also seek from defendant Fulton County and, currently, from three third-party counties copies of *their* databases.  These requests are in addition to the requests directed at the Secretary.  These databases should be the same as the databases in the Secretary's possession, and examining the extent to which they differ is a critical part of the analyses needed to evaluate security vulnerabilities and flaws in the GEMS system in this case.

proceed immediately and will allow a more efficient sequence of gathering information.

Defendants bear the burden to support their confidentiality claims regarding the GEMS databases. *In re Mentor Corp. ObTape Transobturator Sling Prod. Liab. Litig.*, 632 F.Supp. 2d 1370, 1375-76 (M.D.Ga. 2009) (citing *In re Grand Jury Investigation*, 842 F.2d 1223, 1225 (11th Cir.1987)). Plaintiffs bear no burden to prove otherwise. But Defendants have offered only vague, conclusory claims about the "structure" of the GEMS databases, without any evidentiary support. In fact, during the Court-Ordered meet-and-confer on June 28, State Defendants' counsel questioned Plaintiffs' experts at length—without interruption from Plaintiffs' counsel—about their need for the GEMS databases; but State Defendants' counsel abruptly interrupted when Dr. Halderman asked Merrit Beaver, Chief Information Officer of the Secretary of State, a simple and direct question concerning the GEMS databases and refused to allow Mr. Beaver to answer the question. Throughout the call, Mr. Beaver merely parroted counsel's conclusory claim that the "structure" of the GEMS databases is somehow confidential. He never explained how or why this is so or provided any details to support the claim. When *Dr. Halderman* asked him what aspects of the GEMS system he would examine were he to analyze the security of the system as

Plaintiffs' experts seek to do and whether he would rely only on what State

Defendants have offered to produce, that's when State Defendants' counsel

immediately shut down the discussion and refused to allow him to answer.[3]  State

Defendants' counsel evidently feared what he would have to admit (without having

been prepped for the question):  no reliable or reasonable analyses of

vulnerabilities or flaws in the GEMS system could be performed with the paltry

reports State Defendants have offered or without the GEMS databases Plaintiffs

seek.

The fact is that the GEMS databases should be produced without any

"confidentiality" designation because the State Defendants have not identified any

confidential information that is contained in the GEMS databases.[4]  Indeed, the

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[3] During the June 28, 2015 conference with the Court, State Defendants' counsel
claimed that "the questions were turning into a cross-examination and a deposition
of whether Mr. Beaver would concede certain points."  Hearing Tr. 22:6-9.  This
was surprisingly and disappointingly untrue.  Dr. Halderman—rather than
Plaintiffs' counsel—asked Mr. Beaver a single, direct question aimed at
understanding what Mr. Beaver would examine for the sort of security analyses
Plaintiffs' experts seek to do regarding the GEMS system.  The only "cross-
examination" that occurred was by Mr. Tyson of Plaintiffs' experts, which
proceeded uninterrupted.  Plaintiffs' experts have nothing to hide.

[4] The GEMS databases that Plaintiffs seek in discovery should not contain
passwords, encryption codes, or other security information, but, if they do, that
information can be redacted before production.

State Defendants concede that there is no confidential data contained in GEMS databases, and instead vaguely insist that the "structure" or "archecture" of the GEMS databases is somehow confidential because it is unique to Georgia and that disclosure of the GEMS databases will somehow threaten election security.  Yet the State Defendants do not explain even generally what is unique about the "structure" of Georgia's GEMS databases (or what that even means) and do not provide any evidence or expert testimony supporting that naked assertion.[5]

In fact, the Secretary of State's current position is directly contradicted by the sworn testimony of Merle King, the former Executive Director of Georgia's CES.  Mr. King was an expert for the government in the Pima County case, and testified that the "structure" of the GEMS databases in Georgia is consistent with that of GEMS databases all over the country:

> The structure of the database is consistent through all jurisdictions that use GEMS, so the revelation of one jurisdiction's database structure reveals information -- potentially reveals information about other jurisdictions.

(Deposition of Merle King, at 11:17-21, attached as Exhibit B).

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[5] For testimony explaining the GEMS databases generally, and the issues outlined in this Brief, *see* the Declaration of Dr. Alex Halderman, attached hereto as Exhibit G.

In addition, Coalition Plaintiffs' expert has reviewed GEMS databases from other jurisdictions (which are public records) and has found "no data" that "poses a privacy threat to voters or exploitation of the voting system by being disclosed." (Bernhard Decl., July 1, 2019, attached as Exhibit C).  In addition, Mr. Bernhard states: "The structure of the database is disclosed in GEMS manuals that have been publicly available since the system was first put in service."  (*Id.*).

While the GEMS servers—containing the GEMS *software*—may contain source code and sensitive information that needs reasonable security protection, the GEMS databases do not. A GEMS database is just a file—essentially a table—containing data. Before the election, it contains data on how ballots should be configured and votes recorded. After the election, it contains data about those votes. Because the GEMS databases are just Microsoft Access worksheets, they do not contain proprietary source code, personally identifying voter information, or other sensitive information.  (*See generally* Bernhard Decl. ¶¶ 12 – 14).

Other states' GEMS databases have been made public without any negative consequences.  The website Black Box Voting has published not only GEMS databases from Alaska and California, but also other documents related to the GEMS Election Management System more generally. Bev Harris, *Elections Industry: Voting System Technical Material, Manuals, Troubleshooting*, Black Box

Voting.org (Jan. 8, 2014), http://blackboxvoting.org/voting-system-technical-information/. These include a GEMS user manual, a GEMS training guide, assignment lists for locations (*including Georgia*) using GEMS EMS, a manual for the communications protocol used to exchange data with a GEMS Server, and a *"*working full installation kit for Diebold GEMS system." No known security issues have resulted from the public disclosure of GEMS databases from Alaska, California, or Arizona.  Thomas A. Ryan served as a member of the Pima County Election Integrity Commission from 2008 to 2018.  In his declaration, attached hereto as Exhibit D, Dr. Ryan states: "GEMS databases were available for public inspection in Pima County from 2008 until the system was replaced in 2016. During that time, I am aware of no problems arising from the availability of the databases."  (*Id.* ¶ 17).

The State's handling of the GEMS Databases also is inconsistent with their current claim of confidentiality.   Director of Elections Michael Barnes admitted in deposition testimony last week that at least one Georgia GEMS database was accessible and downloadable on CES's websever at KSU for months (and probably years) and that the Secretary did not secure CES's webserver for months after being warned by Logan Lamb of the public accessibility to the databases and associated files.

State Defendants' confidentiality claim is further inconsistent with the extremely wide distribution of the databases.  In his deposition, Mr. Barnes confirmed that GEMS databases are sent to all 159 counties and then copied by the counties onto memory cards that are then loaded into the State's 27,000 DRE machines.  Lynn Ledford, Gwinnett County Director of Elections and Registration, testified that counties share DRE machines with municipalities requiring DREs to conduct their own municipal elections. The internal memory of these DREs contains GEMS database information from prior elections when the machines are transferred to the municipalities.  The municipalities are not subject to nondisclosure agreements for this GEMS database data. *See* Deposition of Lynn Ledford, attached as Exhibit E, at 173:15-177:22.

Jennifer Doran, Morgan County Election Supervisor testified in her deposition that Morgan County engages an independent contractor to support the administration of their elections. This contractor has access to the counties' GEMS Databases without restrictions on disclosure.[6]

Plaintiffs understand that it is frequently more convenient for parties to concede to confidential treatment of documents in discovery even when there is no

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[6] The transcript of Ms. Doran's June 29, 2019 deposition will be filed with the Court when it is available.

colorable claim to confidentiality, simply to avoid the burden and expense of

disputes such as this.   However, to concede to a confidentiality designation for this

manifestly public information would be inconsistent with the standards this Court

has articulated for such treatment and with the fundamental principles of

government transparency and accountability through open meetings and open

records.  Plaintiffs will, of course, comply fully and carefully with any Protective

Order entered by this Court, but do not believe that the State Defendants have

come close to carrying their burden of establishing that the GEMS databases are

confidential.

## II.   REVIEW OF REPORTS GENERATED BY GEMS DATABASES IS INSUFFICIENT

State Defendants offer to produce certain, limited reports generated by

GEMS databases as a substitute for the production of the GEMS databases

themselves.  A closer review of what the GEMS databases contain, however,

confirms that review of reports generated by the GEMS database will not provide

meaningful discovery because they will likely not disclose errors or other flaws or

vulnerabilities in the configuration of the GEMS databases.

The GEMS databases are worksheets built in Microsoft Access, a commonly

available commercial software program used for worksheets and databases.  (M.

Bernhard Decl., attached as Exhibit C, at ¶ 13).  In his recent deposition, Michael

Barnes confirmed that the GEMS databases are built in the Secretary of State's

office for each election in each county and then transmitted to each county prior to

the election.   After the election, each county transmits the GEMS database back to

the Secretary of State with completed vote information.

To show how GEMS databases are built, Plaintiffs have attached as Exhibit

F selections from the GEMS users manual.[7]   To build a GEMS Database for a

particular election, the Secretary of State's staff will load tables of information into

the database for the particular race, and then make a number of choices about the

relationships between the various tables of information.   Several of the steps would

involve naming the election (in the User Guide it is "Beaufort County General

Election") (page 2-4), selecting a date (page 3-4), and selecting the "voter group."

A non-partisan election ("N.P."), for example, should be coded with the

identification number "0."   A Green party primary should be coded with the voter

group number 5, which number (if the database is configured correctly) should

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[7] In his recent deposition, Mr. Barnes testified that the generic 2005 Users' Guide
attached as Exhibit D appears similar to the Users Guide used by Georgia today.
While GEMS Databases in Georgia may have some Georgia-specific fields or data,
the *structure* is identical to every other GEMS Database from every other
jurisdiction.  Defendants have provided no evidence to the contrary.  (The
transcript of Mr. Barnes' deposition will be provided to the Court as soon as it is
available).

correspond to Green party voters.   Other sections of the User Guide shows how to

assign numbers for the various candidates in each election.

An examination of a GEMS database itself may, for example, reveal quickly

that the database was misconfigured to record votes cast for Candidate A as votes

cast for Candidate B, or that votes cast for Lieutenant Governor were actually

being recorded as votes for State Senate District 47 candidates, or that some ballot

styles displayed on the touchscreen failed to include a given contest.  No standard

report produced or display of archived files will detect the source or cause of the

errors, and the reports themselves may be corrupted. Diebold voting system experts

know that the GEMS Database "fails to conform to fundamental database design

principles and software industry standards for ensuring accurate data. Thus, in

election tabulations, aspects of the GEMS design can lead to, or fail to protect

against, erroneous reporting of election results." Thomas P. Ryan and Candice

Hoke, *GEMS Tabulation Database Design Issues in Relation to Voting Systems*

*Certification Standards*, 2007 Usenix/Accurate Electronic Voting Technology

Workshop, at 1.[8]

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[8]https://www.usenix.org/legacy/events/evt07/tech/full_papers/ryan/ryan.pdf.

GEMS database analysis and comparisons to polling place paper records could also reveal signs of interference. Standard reports from the GEMS databases will not inform an examiner of a programming, configuration, or operational error, and would not reveal malicious hacking or other interference. If someone had gained access to a GEMS database and intentionally misconfigured it—without malware or some sort of hacking—the reports might read as completely normal because the database is producing what it was configured to produce. "The Diebold/GEMS system is particularly vulnerable to malicious data manipulation because the election database can be edited with the aid of commonly available software. Editing the database in this way leaves no traces in the election system activity logs." Ryan Decl. at ¶ 13. "Detection of data manipulation would require analysis of the election database to look for inconsistencies. Standard reports generated by the GEMS system would rarely detect such manipulation or configuration errors." *Id.* at ¶ 14.

Coalition Plaintiffs' expert Matthew Bernhard explains that the only way to determine the impact of potential programming defects upon the number of votes is to review the original files used in the election—in this instance, the GEMS databases. (Bernhard Decl. ¶ 15, attached a Exhibit C). No standard report produced by the Diebold system would likely expose such programming errors, in

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particular because the programming that generates such reports may itself be

faulty.[9]  Malware and other forms of intentional interference may affect the

production of the reports as well, in order to cover its tracks. Moreover, the reports

are just PDF printouts that can be hundreds of pages long for each county for each

election.  They are not amenable to proper data analysis or even review; it would

be logistically infeasible for Plaintiffs to rebuild the data in these reports into a

useful data set.  The ballot image reports from just the November 8, 2018 election

would comprise nearly 4 million pages, making analysis impossible with mere

PDF reports.  The GEMS databases themselves are needed for meaningful security

and integrity analyses.

## III.   PRODUCTION OF GEMS DATABASES IS DISTINCT FROM AND SHOULD PRECEDE PRODUCTION OF GEMS SERVERS

For a host of practical reasons, the production of the GEMS databases

should precede the production of the more complex and sensitive GEMS servers.

Review of the GEMS databases—while incomplete—is the most expedient means

of beginning to identify errors or other flaws or vulnerabilities in the GEMS

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[9] These reports include the "Base Precincts With Races Report," the "Vote Center with Cards Report," the "Statement of Votes Cast Report," the "Summary Report," and the ballot image reports.

system and does not implicate the security concerns presented by review of the GEMS servers.

Specifically, Plaintiffs seek review of the GEMS databases to answer questions related to specific anomalies and apparent errors detected in reviews of public records of recent elections, especially the November 6, 2018, election. These questions include such issues as:

- Did errors in a GEMS database configuration cause some voters' ballots to exclude the Lt. Governor's race?

- Did database configuration defects create an exaggerated level of undervote in the Lt. Governor's race in some precincts in African American communities?

- Are anomalous results on election night poll tapes also reflected in the vote tally databases? Are there patterns that point to the underlying cause for the anomalous results?

- Are vote tallies accurately tabulated?

- Are there configuration defects that caused the unexpectedly high participation rates in isolated low profile down ballot races?

- Did configuration defects switch the vote tallies between candidates?

- Were there memory cards containing votes reported on poll tapes that failed to be loaded into a GEMS database?

- When poll tapes have discrepant ballot cast quantities, which number of ballots was counted?

- For poll tapes dated well before or after the election, what vote tallies were included in the GEMS Databases for the official count?

- What vote data was uploaded from DRE memory cards that poll tapes indicate appear to contain corrupted time, date, and election information?

- Why do races for Congressional Districts 6, 11, and 13 appear on the poll tapes at Grady High School precinct, which is in Congressional District 5? Are the DREs generating defects or was there a misconfiguration in the GEMS Databases?

- Why do some DRE ballots appear to show no votes cast? Is this a configuration error or other potential defect to be analyzed?

- During Fulton County's upload of the April 18, 2017, Special Congressional District 6 election, what GEMS database loading errors were recorded? Do all memory cards appear to be loaded? Are there anomalous appearing results in the database from cards that were improperly uploaded on election night?

- When polling place recap sheets show a different number of voters voting than the DRE machines report as total ballots cast, what number of ballots was recorded in the GEMS Database for vote counting?

Subjecting the GEMS databases to the security measures that forensic images of the GEMS servers may warrant would greatly prejudice Plaintiffs and their ability to prosecute their claims in this case.  The labor-intensive work in reviewing the GEMS databases for answers to these and other important questions regarding the security and integrity of the GEMS system does not require cyber-security or computer science expertise, and is better undertaken by data analysts, elections systems experts, and counsel familiar with how the elections should be conducted and ballots configured.  Plaintiffs expect the analysis to require hundreds of person hours of analytical and clerical work that is not appropriate or economically feasible for a computer security or voting system computer science expert.[10]  The cost alone to Plaintiffs would be enormous.  But neither do such experts have the time for such a substantial undertaking.  Voting system experts, such as Alex Halderman and Matthew Bernhard, will assist in the technical aspects of forensic reviews, but they cannot alone perform the clerical analysis of data in a

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[10] For the Coalition Plaintiffs, Coalition Plaintiff William Digges III, who also has substantial database experience, will lead this review.

database, or testing tallies, or the comparison back to hundreds of paper records. Nor is it appropriate to expect them to do such clerical work.

Analysis of the data and configurations found in the GEMS databases by Plaintiffs may pinpoint configuration mistakes or evidence of more fundamental systemic flaws or vulnerabilities in the databases or election system, flaws that will need further forensic analysis of the databases or the GEMS servers themselves.

For the foregoing reasons, the Court should order the Secretary to produce the GEMS databases immediately without any confidentiality restriction.

Respectfully submitted this 1st day of July, 2019.

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## **CERTIFICATE OF COMPLIANCE**

Pursuant to LR 7.1(D), I hereby certify that the foregoing document has been prepared in accordance with the font type and margin requirements of LR 5.1, using font type of Times New Roman and a point size of 14.

*/s/ Bruce P. Brown*
Bruce P. Brown

## CERTIFICATE OF SERVICE

This is to certify that I have this day caused the foregoing to be served upon all other parties in this action by via electronic delivery using the PACER-ECF system.

This 1st day of July, 2019.

/s/ Bruce P. Brown
Bruce P. Brown

EXHIBIT

A

1      IN THE UNITED STATES DISTRICT COURT
      FOR THE NORTHERN DISTRICT OF GEORGIA
2         ATLANTA DIVISION

3

4 DONNA CURLING, ET AL.,    :
            :
5     PLAINTIFFS,    :
 vs.          : DOCKET NUMBER
6            : 1:17-CV-2989-AT
 BRAD RAFFENSPERGER, ET AL.,  :
7            :
     DEFENDANTS.    :
8

9

10   **TRANSCRIPT OF TELEPHONE CONFERENCE PROCEEDINGS**

11    **BEFORE THE HONORABLE AMY TOTENBERG**

12     **UNITED STATES DISTRICT JUDGE**

13       **JUNE 28, 2019**

14        **2:06 P.M.**

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20

21 *MECHANICAL STENOGRAPHY OF PROCEEDINGS AND COMPUTER-AIDED*

22     *TRANSCRIPT PRODUCED BY:*

23

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            *75 TED TURNER DRIVE, SOUTHWEST*
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 2


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            ADAM SPARKS
 8          KREVOLIN & HORST, LLC

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17          ROBBINS ROSS ALLOY BELINFANTE LITTLEFIELD, LLC

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23          CHERYL RINGER
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1        **P R O C E E D I N G S**

2     **(Atlanta, Fulton County, Georgia; June 28, 2019.)**

3              COURTROOM DEPUTY CLERK:  Good afternoon, everyone.

4     We're here for the teleconference in the case of Curling, et

5     al. vs. Raffensperger, et al., Civil Action Number 17-CV-2989.

6              Beginning with the Curling plaintiffs, would counsel

7     please introduce yourselves for the record.

8                        **(Unintelligible.)**

9              MR. SPARKS:  This is Adams Sparks with Krevolin &

10    Horst also for the Curling plaintiffs.

11             COURTROOM DEPUTY CLERK:  Okay.  We are not able to

12    hear.  Are we on cell phones?

13             MS. CHAPPLE:  We are not -- we are on -- is that a

14    little better?  I'm leaning over the phone.

15             COURTROOM DEPUTY CLERK:  That's actually a whole lot

16    better.  If you would please make your appearance again.

17             MS. CHAPPLE:  This is Catherine Chapple with Morrison

18    Foerster.  David Cross is also on the line from Morrison

19    Foerster.  I have with me in the room Dr. Alex Halderman.  And

20    on the line is also Adams Sparks with Krevolin & Horst.  We're

21    all on the line for --

22             MR. KNAPP:  Halsey Knapp is here as well.

23             THE COURT:  So Halsey was clear.  When Catherine was

24    speaking -- this is Judge Totenberg -- it was a -- excuse me

25    for using your first name.  But it is the easiest at the moment

1   on a Friday afternoon.  It was -- there was a whole side

2   buzzing.

3           MS. CHAPPLE:  Was there?  Okay.  I'm sorry, Your

4   Honor.  I will try to call back in using another -- another

5   phone.

6           THE COURT:  Okay.  Thank you.

7           MS. CHAPPLE:  Okay.  Just one second.

8                   **(There was a brief pause in the proceedings.)**

9           COURTROOM DEPUTY CLERK:  I'm sorry.  Who is speaking?

10          Hello?

11          MS. BURWELL:  Hello.  This is Cheryl Ringer and Kaye

12  Burwell from Fulton County.  All of a sudden, our phone kind of

13  went silent.

14          COURTROOM DEPUTY CLERK:  No, ma'am.  We were just

15  waiting on Ms. Chapple to come back on.

16          MS. BURWELL:  Thank you.

17          COURTROOM DEPUTY CLERK:  Who do we have on the line

18  for the Coalition?

19          MR. BROWN:  Hello.  This is Bruce Brown.  And also on

20  the line is Matt Bernhard, our expert, and my client, Marilyn

21  Marks.

22          COURTROOM DEPUTY CLERK:  Okay.  Thank you, Mr. Brown.

23          State of Georgia?

24          MR. RUSSO:  This is Vincent Russo.  I have here with

25  me Josh Belinfante.  We also have on the line Bryan Tyson,

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 1   Bryan Jacoutot, and Carey Miller.  And we also have in here

 2   with us from the Secretary of State's office Merritt Beaver,

 3   the CIO of the Secretary of State's office, and Kevin Rayburn.

 4               COURTROOM DEPUTY CLERK:  Okay.  Thank you, Mr. Russo.

 5               And we have Ms. Ringer and Ms. Burwell on for Fulton

 6   County.

 7               MS. BURWELL:  Yes.

 8               MS. CHAPPLE:  Hello, this is Catherine Chapple and

 9   Dr. Halderman.  We just called in from my office.

10               COURTROOM DEPUTY CLERK:  Sounds much better.  Thank

11   you, ma'am.

12               MS. CHAPPLE:  Perfect.  Thank you very much.

13               MR. CROSS:  This is David Cross.  I'm on for the

14   Curling plaintiffs as well.

15               THE COURT:  All right.  This is Judge Totenberg.

16   Good afternoon.  I'm going to deal with the issue -- the

17   substantive issues before you get to the protective order.

18   Though I understand that there is a strong connection between

19   the two.  And arguably some of the issues might be resolved if

20   you had resolved the protective order issue.

21               But let me at least get a sense of the issues at play

22   with the -- on the merits of the request for production.  I

23   don't -- let me just ask the first question.  Why is it that

24   the plaintiffs need the entire state GEMS database?

25               MR. BROWN:  Your Honor, this is Bruce Brown for the
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1  Coalition plaintiffs.  The GEMS database is an application

2  system that the Secretary of State sends to each of the

3  counties after building the ballots at the Secretary of State's

4  office.  And it is the GEMS database that contains fields and

5  tables.  And it is the mechanism by which the GEMS system

6  accesses the information from a voter when a voter votes.

7        So the GEMS database -- it is by no means the entire

8  state system.  It is just one piece of it.  It is the low

9  hanging fruit in a way in that it gives a good overview of the

10 application, and it is very easy to produce -- physically easy

11 to produce.  It is simply a CD for each county.

12        And our experts understand that it is the best first

13 thing to review when trying to look for defective programming.

14 And the GEMS database is a -- there is no source code.  There

15 is no proprietary IP involved.  It is a public record in other

16 states, though not in Georgia.  Examples of GEMS databases are

17 on the internet.  And a GEMS database for the State of Georgia

18 was one of the files that Logan Lamb had access to when he had

19 access to the web server at KSU in 2016.

20        And so it seems to be a good place to start on the

21 discovery.  We sent this discovery out in March actually even

22 before the discovery period began.  And one of the reasons why

23 we sent it out was to get a start on lining up the forensic

24 work that would be necessary.  There's many steps that follow.

25 But this was a good first step.

7

1          MS. CHAPPLE:  Your Honor --

2          THE COURT:  Just one second.

3          Mr. Brown, let me ask you an additional just

4    follow-up question, which was:  Why would you need it for the

5    entire state as opposed to the CDs of the database for a

6    selective -- a representative number of cities and counties

7    associated also with those that are having elections?

8          MR. BROWN:  I will give -- I will give you one

9    advantage.  We have seen aberrant vote totals in many

10   counties --

11         THE COURT:  You had seen -- I'm sorry.  You had seen

12   what?

13         MR. BROWN:  Aberrant vote totals that appear in some

14   counties that do not appear in others.  And so one of the ways

15   of trying to detect a defect in the programming, innocent or

16   not, would be to compare the database that was sent to County

17   A, for example, with the database that was sent to County B.

18         And it is also -- on just the burdensome issue, Your

19   Honor, we're just talking about CDs.  It is not -- it is not a

20   very taxing production effort to produce the databases for the

21   different counties.  It is just (unintelligible) or any sort of

22   forensic type of work involved in the production.

23         THE COURT:  Keep close to the mic on your phone

24   because you're coming in and out.  I understand you.  But the

25   court reporter cannot get it with enough consistency to be able

1    to --

2              MR. BROWN:  Thank you, Judge.  I apologize.  We're in

3    Athens.  We just took a deposition in this case, and so I'm

4    speaking on a cell phone.  I apologize.

5              THE COURT:  Okay.  Well, Ms. Chapple, was that you

6    trying to speak?

7              MS. CHAPPLE:  Yes, Your Honor.  Thank you.  This is

8    Catherine Chapple.  I wanted to add two things to what

9    Mr. Brown was saying.

10             First is that the GEMS system is the ideal -- is an

11   ideal infection point.  And so it is also a place that we would

12   like to look for malware on the machine -- within the system.

13             And then, second, that the Curling plaintiffs would

14   like more than just the CDs that Mr. Brown is referencing.  We

15   would like -- I'm actually looking at Dr. Halderman because I

16   think he is in a better position to explain exactly what we are

17   looking for if -- but -- and then he typed out a hard disc

18   image of the server is what the Curling plaintiffs would like.

19             THE COURT:  And is that what you have actually

20   requested as well?  I know you would like it, but has that been

21   the subject of an actual request?

22             MS. CHAPPLE:  I believe so, Your Honor.  But I would

23   need to look for the number of the request.

24             THE COURT:  All right.  So just to save time --

25             MR. CROSS:  Your Honor, this is David Cross.

1           THE COURT:  Yes.

2           MR. CROSS:  I can help.  It is Request Number 15.  It

3    is the one that we referenced in the notice that we sent in to

4    join the call.  It seeks all the underlying data on the GEMS

5    server and in other respects.  So the GEMS server is the only

6    focus today.  And we received an amended response from the

7    state defendant this morning.  The request indicating that they

8    are not going to produce the GEMS database itself or any of the

9    underlying data or image is how I read their response.

10          THE COURT:  All right.  So does Dr. Halderman wish to

11   explain the need for this from your perspective or his

12   perspective?

13          DR. HALDERMAN:  Yes, Your Honor.  So the GEMS

14   database or the GEMS server -- excuse me -- is essentially the

15   nexus of the whole election system.  This is a place from which

16   ballot programming is being produced and distributed down

17   through the counties to the voting machines throughout the

18   state.

19          So that positioning makes it an ideal point for an

20   attacker to begin an infection that they would try to spread to

21   voting machines in the field.  We would like to be able to

22   perform forensics on the GEMS server to see if there is

23   evidence that such an infection did occur.

24          THE COURT:  All right.  So the state indicates it has

25   made other alternative suggestions in place of these requests.

| | |
|---|---|
| 1 | I don't know what those are.  But I'm trying to, first of all, |
| 2 | just determine:  Did you actually sit down and discuss any of |
| 3 | those?  Did you have any of your experts talk with the chief |
| 4 | technology officer for the Secretary of State's office, Merritt |
| 5 | Beaver, or what did you do? |
| 6 | MR. BROWN:  Your Honor, this is Bruce Brown.  We did |
| 7 | discuss the options.  And the options -- there were a couple of |
| 8 | things discussed with the state.  The first was we made |
| 9 | repeated requests to the state to identify the fields and the |
| 10 | tables in the database that they contended contain sensitive |
| 11 | information but they did not want to disclose. |
| 12 | And the state refused to identify the fields taking |
| 13 | the position it said that it was the entire architecture of the |
| 14 | database that was proprietary.  The next thing that we |
| 15 | discussed was their offer to produce certain printed reports |
| 16 | that would be generated by the GEMS database pursuant to the |
| 17 | GEMS database report function.  Just like most applications, in |
| 18 | addition to all the computing functionality they have, they |
| 19 | also have a piece that will let you select data and report it |
| 20 | anyway you want to. |
| 21 | Our experts are on record as saying that that |
| 22 | production of reports generated by the GEMS database may be |
| 23 | interesting and it may also be subject to discovery but it is |
| 24 | many orders of magnitude removed from any kind of effort to |
| 25 | determine if there's defective underlying programming.  You |

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1    would have to take a PDF of a report.

2              So those were the two areas that we discussed.  And,

3    frankly, I think it is fair to both sides -- to both sides that

4    we are at a pretty fundamental disagreement over the discovery

5    of the GEMS database.  We have advanced it to a point where it

6    is appropriate to seek Your Honor's guidance.

7              THE COURT:  Well, does anyone on the plaintiffs' side

8    want to explain why their offer of the report would -- while

9    not the full monty would be still not -- and I understand it is

10   not.  But why wouldn't it be sufficient from your perspective?

11   Is that Dr. Halderman who is going to be --

12             DR. HALDERMAN:  Yes, Your Honor.  I can explain.

13   What a report from GEMS covers is -- it is essentially a

14   summary of some of the kinds of data in the system.  But it

15   does not tell us about the -- about the underlying programming

16   essentially that is going to be affecting the way -- the way

17   votes are counted.  Nor does it tell us about potential

18   corruption to the database itself that could be used as a means

19   of infecting or altering the behavior of the system.

20             I would also like to add that our request for the

21   hard disc image for this server I had said was to allow us to

22   identify whether infection had occurred.  I should have added

23   that it will also allow us to evaluate vulnerabilities in the

24   system that could provide a way to infect the system and

25   manipulate elections using the GEMS server as an infection
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1    point.

2            THE COURT:  I understand some of this.  But the

3    plaintiffs provided me with a copy of the 2007 decision from

4    Arizona -- from an administrative judge in Arizona.  And, of

5    course, that was pursuant to an Open Records Act request.  But

6    in that case, which was -- I'm sorry.  It was in front of the

7    superior court judge.  But it was *Democratic Party of Pima*

8    *County vs. Pima County Board of Supervisors.*  And I guess there

9    was an administrative judge involved also who was writing the

10   initial decision.

11           The judge found that the database should be made

12   available but not the programming because of the concerns about

13   security and security of the election-related functions.  And

14   so it seems like the Coalition is willing to forgo having --

15   obtaining that, the programming information, and just wants the

16   database and the Curling plaintiffs want both.

17           Is that a correct summary?

18           MR. BROWN:  Your Honor, that's a correct summary as

19   of this moment.  This is Bruce Brown for the Coalition.  I'm

20   sorry.  But this was our first very limited narrow request, and

21   we would eventually also seek the disc image of the servers --

22   there is more than one -- and pursue what Dr. Halderman

23   suggested.

24           So we teed up the dispute resolution process over

25   this very narrow limited request that we made first.  And

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 1    Curling came in with a broader -- broader request.  So we have
 2    technically joined their request as well.  But in terms of the
 3    dispute resolution process, we are here before you on the GEMS
 4    database.  And so that is what our request today concerns.
 5              MS. CHAPPLE:  Your Honor, this is Catherine Chapple
 6    for the Curling plaintiffs.  Yes.  Yes, that is what we're
 7    asking for.  And we feel that a protective order should be
 8    sufficient to protect and allay the concerns of the defendants.
 9              We also asked them when we met a couple of weeks ago
10    at the Rule 26(f) conference to identify what issues would be
11    inherent in our request, what they were willing to give us and
12    what they could not give us.  And we still have that offer
13    open.  But we have not heard from them as to specifics that
14    would allow us to tailor our request any further.
15              THE COURT:  Well, the way I understood it from the
16    state's statement of its position was they felt that you were
17    not interested, you weren't going to consider any alternatives,
18    which might be so.  I don't know.  But you saw that as well?
19              MS. CHAPPLE:  Yes, Your Honor.  Our position was that
20    we don't have the access to the information about the system to
21    know what is involved and what they could give us that they
22    might be comfortable with that would be sufficient for us to be
23    able to respond without more information from them.
24              So it is not -- it is not that we aren't interested.
25    It is that we don't have enough information to know whether we
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14

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 1   would have an interest.

 2               THE COURT:  Well, what have you-all done to have

 3   Dr. Halderman talk with Mr. Beaver or somebody else designated

 4   by the state so that you could explore that very question?

 5               MS. CHAPPLE:  Your Honor, that is a good suggestion,

 6   and we would be open to a conversation like that.

 7               MR. CROSS:  Your Honor, this is Davis Cross.  I guess

 8   the one thing that I would offer is we don't have a lot of

 9   time.

10               THE COURT:  No.  I know that.

11               MR. CROSS:  We want to be efficient.  My concern is

12   what we have heard from them so far and what they have offered

13   up in terms of these reports, which we have talked through with

14   Dr. Halderman, obviously are inadequate.  If there is a way to

15   work this out to where we get the data and we get it quickly,

16   certainly we're willing to explore that.

17               But we have not heard anything from them that would

18   suggest that they are looking to give us anything other than

19   what sounds like are just one-off reports or snapshots of data

20   as Dr. Halderman explained won't do the job.

21               As Bruce pointed out, there are two things in the

22   database itself.  There is the forensic image.  If we can get

23   the database, that is a start.  But I will add the reason why

24   we put them together is because, as Dr. Halderman has explained

25   to me, there is not a substantive difference.  But if they give
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1    us the database, there is nothing else sitting on there that a

2    forensic image has any greater sensitivity to.

3              So our view is let's just do it in the most efficient

4    way, which is take a forensic image of the server -- multiple

5    servers as it may be.  We get the substantive data.  But we

6    also get the additional forensic -- the whole comprehensive

7    image that allows the expert to do the forensic analysis, which

8    is really at the core of this case, rather than doing it

9    piecemeal.

10             Because at the end of the day, again, the forensic

11   image is going to contain the same substantive data as the

12   database itself.  But we'll take it in whatever steps we can

13   get it.

14             I just haven't heard anything in the number of

15   conversations we've had with Mr. Russo's team that they are

16   willing to give us anything remotely close to what our experts

17   need.  So I'm just not convinced that further conversations are

18   going to get us there.  But we'll explore that obviously if the

19   Court wants.

20             THE COURT:  Who is going to speak on behalf of the

21   state?

22             MR. TYSON:  I will, Your Honor.  This is Bryan Tyson.

23   We have had some conversations.  I think it is important to

24   note that we have not had a situation where Dr. Halderman has

25   been able to speak to Mr. Beaver -- something we suggested --

1    about how to accomplish this.

2            I think the plaintiff has correctly identified that

3    this is the nexus to the election system.  It is the most

4    critical infrastructure we have in terms of our election

5    system, which is why we are so careful with releasing it and

6    don't want to release it to someone who could -- or I think the

7    reality is when you take the database itself -- I'll start with

8    that and then go to the rest of the server.

9            If someone had the database, they could see the

10   relationships between the various data inside the database.

11   And if someone was trying to design malware, they would need

12   that information to do that.  Georgia has a slightly different

13   version of a GEMS database than other states.  And as a result,

14   an attacker without the knowledge of the structure of the

15   database can't -- is going to have a harder time designing

16   something.

17           In addition, there are other non- -- other

18   confidential information like the particular numbers assigned

19   to candidates.  And if you're going to try to manipulate votes,

20   you have got to know the candidate numbers and the placements

21   to be able to do that.  That would also be revealed in the

22   database.

23           So from our perspective, the plaintiffs' desire to

24   look for malware can be addressed through several other means

25   that we have been working towards.  The first obviously was the

17

1    reports.  So look for anomalies there.  We understand the

2    plaintiffs don't like that option.  We have a software called

3    GEMS Verify that checks the executable files of the GEMS server

4    against a trusted version of the GEMS -- of the GEMS executable

5    files that we can run on the database and ensure that the

6    executable files have not been altered in any way and share

7    those results with the plaintiff.

8            We also have from our understanding from our computer

9    science folks and others an Access database, which is what the

10   database is that the plaintiffs are seeking.  The only malware

11   that could reside in the Access database -- so, you know, the

12   executables of the server files are one thing.  Check those

13   with GEMS Verify.

14           The database can only have malware through a macro

15   inside the database.  And we would be more than happy to

16   provide the plaintiff with all of the macros if we find any

17   that are currently in the GEMS database.

18           We think that addresses their concerns.  It lets them

19   look at the -- see that server files have not been altered and

20   also see that the database does not have macros in it without

21   having to reveal the structure and the relationship of the

22   database and all that is inside there.

23               THE COURT:  Well, I guess --

24               MR. BROWN:  Your Honor, if I may, this is Bruce

25   Brown.

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1              THE COURT:  Let me just stop y'all for a second.  I
2     have a general idea of what you are speaking about.  But it
3     obviously would have been better if Mr. Halderman --
4     Dr. Halderman had -- and Mr. Beaver or his representative had
5     spoken before this conversation so that we're not just playing
6     it out in kind of rigid lawyer form now rather than their
7     having really talked and seeing if there is anything else.
8              I understand that what the plaintiffs want is what
9     they think is ultimately necessary.  And I'm not dismissing
10    that.  But at the same time, there is some concern about
11    proportionality that I have particularly in that we're going --
12    the state is moving to a different data system.
13             I realize that it all may fall apart.  But,
14    nevertheless, that is not the expectation, and I can't operate
15    on that expectation.  So I'm looking at the amount -- the
16    number of elections we have, the nature of the elections.  And
17    I'm saying I have some proportionality concerns and what -- are
18    there any work-arounds at all at this juncture, even though the
19    ideal might be from Dr. Halderman's perspective and the
20    plaintiffs' perspective something else?
21             Is there anyway I could persuade you-all to put the
22    two of them on the phone for 15 or 20 minutes to talk?  And we
23    would -- I mean, I'm not saying that you-all can't be present.
24    But that they are actually talking.  I mean, I would have hoped
25    that that would have happened.  But it hasn't happened.
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 1                    Is that -- is that feasible?

 2                    MR. TYSON:  For the state, Your Honor, we would be

 3   more than happy to make Mr. Beaver available.

 4                    MR. CROSS:  I thought Mr. Beaver was with you guys.

 5   Can we do that now?

 6                    MR. TYSON:  Yeah.  And we're fine to have the

 7   discussion now or with Dr. Halderman directly.  We're very open

 8   to that.

 9                    MR. BROWN:  We are -- Your Honor, this is Bruce

10   Brown.  Our expert would like to participate as well.

11                    THE COURT:  Yes.  I'm sorry.  I missed what the name

12   of your expert was.

13                    MR. BROWN:  It is Matt Bernhard.

14                    THE COURT:  Right.  I remember the affidavit now.

15                    All right.  Well, why don't I get off the phone and

16   you-all -- I can go even on mute if you want to.  But that is

17   an extra -- which is -- which is fine.  But you could also

18   arrange it differently and call each other.  But I don't know

19   who has a line there, and then you-all have to get connected

20   again.

21                    But why don't I just go on mute.  Then when you are

22   ready to -- you can -- you can always then have them talk

23   separately or whatever you want to do.  You can make the

24   arrangements.  And then when you are ready to actually talk,

25   you can email Mr. Martin as soon as you are ready to talk and
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1   he will be looking every few minutes at the -- at his email to

2   see that you are ready.

3            MS. CHAPPLE:  Thank you, Your Honor.

4            THE COURT:  All right.  Very good.  Thanks.  All

5   right.  I'm going on mute now.  But you are still connected.

6            **(A brief break was taken at 2:38 P.M.)**

7            THE COURT:  Hello.  This is Judge Totenberg again.

8            MR. CROSS:  Hi, Judge.

9            MS. CHAPPLE:  Hi, Judge.

10           THE COURT:  So did you make any progress?

11           MR. CROSS:  I'm not sure we made much progress, Your

12  Honor.  We had a lot of discussion.  Where we ended up was

13  Mr. Brown on behalf of plaintiffs proposed a compromise in

14  limiting the data down to 25 of 159 counties.  We would choose

15  those counties.  So it would be a much smaller sample, which I

16  think was one of the things Your Honor had suggested.

17           We also agreed that we would adhere to similar

18  security protocols that the state has in place for each of the

19  159 counties, which also have a copy of this system and run

20  that system to address their security concerns.  And we offered

21  any other security protocols that they would offer.

22           The end result was they would not offer, as I

23  understood it, anything more than they had originally offered.

24  Although they proposed something additional concerning macros.

25           But where we seem to be divided on really is the

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 1   issue of security.  Their position seems to be that they won't
 2   produce the GEMS database, either the database itself for a
 3   forensic image or what are called MGB files under any
 4   circumstances because it sounds like they just don't trust our
 5   experts to keep that secure, even though we have offered again
 6   to abide by the same or similar protocols as the 159 counties.
 7              I'm not sure where we get at the end of the day.  The
 8   other challenge was Dr. Halderman asked Mr. Beaver whether --
 9   if he wanted to conduct the same sort of analysis that we are
10   trying to do that our experts have described to look for
11   malware in the system, to identify vulnerabilities with respect
12   to the system, is there an alternative approach, is there
13   something less that he would look at beyond what we have
14   requested.  And Mr. Russo would not allow him to answer that
15   question.
16              So we seem to be at an impasse.  I wish I had a
17   better answer.
18              THE COURT:  Let me just -- go ahead.  Who is that?
19              MR. TYSON:  On behalf of the state, Your Honor, I
20   just wanted to give a little bit different view.  I'm not
21   surprised we disagree on this.  But the scenario really comes
22   down to Dr. Halderman and the plaintiffs, even if they are
23   narrowing the number of counties, they are still insisting on
24   the actual raw Access database file.  And those are the ones
25   that show the structure and reveal the structure on everything.
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1    So that doesn't meet our main concern.

2              The other challenge where the databases are located

3    in other places, the counties don't have the same kinds of

4    tools that they would be using and other things that are

5    happening.

6              And to Mr. Cross' characterization that Mr. Beaver

7    was refusing to answer or we wouldn't allow him to answer, the

8    questions were turning into a cross-examination and a

9    deposition of whether Mr. Beaver would concede certain points.

10   That is why we decided to come back to you to just go ahead and

11   address this.  I want to be clear about where we were.

12             THE COURT:  Okay.  So --

13             MR. CROSS:  Your Honor, the question was posed by

14   Dr. Halderman.  If we could get an answer to that question on

15   this call, I think that would help us go a long way.  It was

16   not a cross-examination.

17             THE COURT:  Well, I guess the question --

18             MR. CROSS:  It was a conversation between the

19   parties.

20             THE COURT:  All right.  I'll get to that in a second.

21             All right.  I'll just myself ask if there is any

22   alternatives.  But I guess just -- I wanted to ask about the

23   database itself.  I'm not clear why as the database itself the

24   defendant is not willing to provide that on a CD as Mr. Russo,

25   I believe, you conceded to Adele Grubbs in the Superior Court

1   of Cobb County, I guess it is, that the database itself was

2   public record.  It was the programming that was not -- that you

3   maintained.

4           MR. RUSSO:  Your Honor, I mean -- this is Vincent

5   Russo.  Our concern with the database has always been that it

6   is a roadmap to being able to -- for anybody who wants to

7   conduct -- try to put any malicious -- for putting malware on

8   the system, the database is the roadmap.  And I think the

9   plaintiffs have said so much.

10          What we have offered is the macros.  That, you know,

11  if there was -- if there was some -- there was some malware in

12  that -- might have been in that database, it is our

13  understanding that is where it would exist.  In addition to on

14  the servers, which are the additional reports that we offered

15  to run, it is a test.  It is called the GEMS Verify test that

16  would check the servers to see if there were any files that had

17  been changed.

18          So those two together provide them with the

19  information that is proportional and without necessarily

20  providing the roadmap that someone would need to write -- write

21  malicious -- you know, malicious software.

22          MR. CROSS:  Your Honor, David Cross, if I may.

23                  **(Unintelligible crosstalk.)**

24          THE COURT:  One person.  I know you can't all see

25  each other.  But wait until Mr. Russo is really complete.

1                   MR. RUSSO:  So it sounds like my co-counsel, Bryan

2      Tyson, was going to add something to that.

3                   THE COURT:  Okay.

4                   MR. TYSON:  Yes, Your Honor.  I'm sorry.  Just very

5      briefly.  Bryan Tyson.  I just wanted to also make the point

6      that in front of Judge Grubbs the plaintiffs made the same

7      argument that they are making here.  And Judge Grubbs -- the

8      state took a consistent position.  Judge Grubbs did not allow

9      them to have the database files after a similar argument and

10     believed that the reports that were offered, which was our

11     first offer to the plaintiffs here, were sufficient.

12                  I know the plaintiffs disagree about that.  But it

13     was the same argument, and the state took the same position

14     that we can't give you the actual database.

15                  THE COURT:  All right.

16                  MR. CROSS:  Your Honor, this is David Cross, if I

17     may.  Mr. Russo's argument really highlights and I would say

18     implicitly concedes the point, which is he says the database is

19     the roadmap if someone wanted to hack the system.  Well, that

20     is our point, Your Honor.

21                  The only way to evaluate the infection points as

22     Dr. Halderman describes them and to identify the

23     vulnerabilities is to see that roadmap, what a hacker would

24     would want to see.  The hacker -- the way that they would

25     navigate that roadmap to get into the system.

1          What they are offering, as I understand it, is a

2     small subset of data.  Dr. Halderman has explained in detail

3     why it is not sufficient.  But one of the things that Mr. Russo

4     said, as I understand it, that might let us see if there is

5     existing malware in a small portion of the database.  Again,

6     that doesn't get us where we need to go, which is assessing

7     whether there is malware in other portions of the database but

8     also to the broader point of what the vulnerabilities are

9     because the focus of our case is not just that there's already

10    malware there but that the vulnerabilities themselves are so

11    severe as to vitiate the right to vote in the State of Georgia.

12         And I would say Mr. Russo seems to be conceding the

13    point.  Although he doesn't obviously intend to.  The roadmap

14    is what we need to see.

15         The last point of this, Your Honor, on this issue of

16    security, which really seems to be their only objection here,

17    we have not heard anything from Mr. Beaver or from them that

18    the analysis that needs to get done here can be done on less

19    than what we have requested, which again has been narrowed

20    quite significantly.

21         The last point is Dr. Halderman deals with some of

22    the most sensitive data all the time.  He is one of the leading

23    experts in this field.  He deals with cryptographic protocols

24    affecting tens of millions of websites.  This is what he does.

25    They have specific facilities at the University of Michigan to

1   deal with highly sensitive data.

2           Mr. Bernhard actually is also at the University of

3   Michigan.  So they would have access to similar facilities.  I

4   will offer as a last resort -- Dr. Halderman may kick me for

5   saying this -- if we had to actually go to Georgia in some

6   facility they set up, it would be difficult.  It is not ideal.

7   It would, I gather, hinder the analysis.  But we could explore

8   that, if it is necessary.

9           But the bottom line is their objection is one of

10  confidentiality.  And that is dealt with with the protective

11  order, and we're talking about experts that deal with equally

12  similar, if not more, sensitive data in the regular course of

13  their work.

14          THE COURT:  Let me ask this.  The GEMS database

15  itself -- I just want to confirm -- is going to still be the

16  foundation to draw on when you -- when the state moves on into

17  the next -- the ballot marking device system or not?

18          MR. RUSSO:  That is correct, Your Honor.  When the

19  state moves to the new system, they will not be using the GEMS

20  database.

21          THE COURT:  All right.  And what will be used -- it

22  will not be using it you are saying?

23          MR. RUSSO:  That is correct.

24          THE COURT:  All right.  And how will the data be

25  transferred?  I don't obviously mean all the nitty-gritty

1    details.  But is there anticipated a transfer of all of the

2    voter data?

3              MR. RUSSO:  I mean, I guess I can say we don't -- we

4    don't have a system yet.  So I don't know which system they

5    will be using in lieu of the equivalent to a GEMS database.

6    But, you know, there will be -- there will be something.  I'm

7    just not sure what it is.  And they don't know either.

8              THE COURT:  All right.

9              MR. RUSSO:  Until they know the vendor, they won't

10   know what that will look like.

11             THE COURT:  What again is the date by which the

12   vendor is going to be selected?

13             MR. TYSON:  I believe that was supposed to be

14   mid-July.  But I don't know what the current timeline is.  I

15   think they are still on track on that.  I'm not certain, Your

16   Honor.

17             MR. RUSSO:  I was just confirming.  They are still on

18   target for the original timeline.

19             THE COURT:  Okay.  So I think that the question

20   was -- and I don't see it just as a rhetorical question.  But I

21   understand why counsel for the state prefers not to be -- have

22   their -- Mr. Beaver directly questioned.  And I don't want to

23   be in that position of examining him either.

24             But if there is -- why -- I would like to understand

25   why -- given what you've projected, why do you think -- why

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 1   Mr. Beaver or the state believes that those are adequate

 2   alternatives, knowing what the purpose is in this case?  It is

 3   not just -- of the analysis.

 4              MR. RUSSO:  Just so we understand your question,

 5   you're asking why the macros and the GEMS Verify report are a

 6   sufficient alternative versus the entire -- producing the

 7   entire database?

 8              THE COURT:  Well, the database for 25 localities,

 9   which I thought they had agreed on alternatively.

10              MR. TYSON:  Yes, Your Honor.  This is Bryan Tyson.  I

11   think the important piece is we don't see a distinction between

12   25 and the entire database because our concern is not the

13   amount.  Our concern is the structure.  And if you produce even

14   one database, you are showing the structure.  So on that point,

15   that is there.

16              I think for us the GEMS Verify looks at the

17   executable files that are in use on the server.  The macro test

18   within Access will show any code that can run.  And so it

19   covers that basis.  I think the plaintiffs' view is that there

20   could be something lurking deep inside the database.  But that

21   is our view in terms of the security risks that are associated

22   with it verifying that the executables have not changed,

23   verifying there is not anything else on the server that is

24   obviously there.  And verifying that there is nothing

25   executable within the database covers the concerns about
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1    malware.

2              I understand the plaintiffs disagree.  But that is

3    our view of why that is a sufficient resolution short of

4    exposing the relationships and the structure in the database.

5              THE COURT:  So, Mr. Brown and Mr. Cross and I guess

6    to your experts as well, while it is obviously not what you

7    think in full that you need -- and it is your burden of

8    proof -- why wouldn't this at least begin to be helpful at all

9    to you and your experts in proceeding so that at least it is a

10   major first step or first and second step?

11             MR. CROSS:  Your Honor, I would suggest that

12   Dr. Halderman handle that, if you don't mind.  I think he can

13   better articulate rather than hearing from the lawyers.  And,

14   frankly, I would suggest it is probably better that both sides'

15   experts speak to you directly.

16             Dr. Halderman, do you want to take that?

17             DR. HALDERMAN:  Yes.  So the alternatives that are

18   being proposed about looking for macros or using this hash

19   verifier, they cover entirely different parts of the data than

20   what we are talking about.  What we're talking about is looking

21   for -- looking for kinds of corruption or manipulation that

22   could spread malicious code, which just wouldn't be revealed if

23   they are there by these other tests in which I think are

24   entirely plausible means for malicious software to spread from

25   this nexus of the system to wide areas of Georgia.

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1               And does that answer your question, Your Honor?

2               THE COURT:  Well, sort of.  But the original request

3     at least from the Coalition was just give us the -- basically

4     give us CDs of the voter -- of the GEMS database.  And as I

5     understand the conversation is that the state's concern is that

6     would identify the structure and information that goes to the

7     sort of secure operation of the system and that you're hoping

8     that it will though you don't think it is necessary but not

9     sufficient from your perspective; is that right?

10              DR. HALDERMAN:  That is right.  But if I may say, I

11    think it can be argued that almost any information about the

12    operation of the system could potentially aid an attacker.  And

13    that is why we're proposing to protect the data in the same way

14    that we would protect -- that the counties already protect the

15    data and even to take steps beyond that we routinely take to

16    protect arguably even more dangerous data, if released,

17    including that what we have taken in the past to protect actual

18    flaws in the software running on people's voting machines.

19              THE COURT:  Well, why -- let me just segue for a

20    moment on to the conflict over that protective order.  Why is

21    it that the plaintiffs' counsel cannot agree to the terms

22    proposed by the defendants?

23              I looked at it.  And I understand that there is this

24    disagreement about somehow a printout of the -- of the

25    ballot -- the ballot results in some way on an individual
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 1   ballot basis.  But there also seemed -- because that was
 2   allegedly already a public record -- had been yielded -- had
 3   been -- but I wasn't -- there seemed to be other concerns on
 4   the part of the plaintiffs that I didn't -- I really couldn't
 5   fully understand.
 6             MR. BROWN:  Your Honor, this is Bruce Brown for the
 7   Coalition plaintiffs.  And I think David -- the plaintiffs are
 8   speaking with one voice on these issues.  And I note that the
 9   disagreement here is primarily with Fulton County.  I believe
10   the Secretary of State and the plaintiffs are largely in
11   agreement on these terms.  I could be mistaken.
12             But one -- one issue is whether the protective order
13   should have retroactive effect, meaning that it could cover
14   documents that have already been produced without a
15   confidentiality agreement and produced without a
16   confidentiality stamp.
17             THE COURT:  And this is the one that we got a sample
18   of; is that right?  Or are there others like that?
19             MR. BROWN:  There are many others.  There are --
20   there are scores of ballot image reports that we have that have
21   been produced as open records.  And there's simply no way that
22   we can -- I can let my client agree to a court order that binds
23   us to keep confidential an unspecified universe of documents
24   that the state may later determine are confidential.
25             And, frankly, in my experience you really never do
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1    that.  A protective order covers documents that are produced in

2    discovery.  It is a narrow set.  It doesn't cover information

3    sort of out in the world.

4              THE COURT:  And that has mostly been produced by

5    Fulton County?

6              MR. BROWN:  No.  Other counties -- today, we got a

7    whole trove of the same documents from Bartow County.  They are

8    public.  There is nothing secret about them, Your Honor.  And

9    so the counties are producing them as they should.

10             THE COURT:  All right.  Is it only Fulton or the

11   state also that is asking for this provision?

12             MR. BROWN:  I do not believe -- well, I'll let the

13   state speak for itself.  But I don't think the state was

14   insisting on retroactive application of the protective order.

15             MR. RUSSO:  Your Honor, this is Vincent Russo.  Our

16   issue is we want to be able to -- if there is something

17   produced in this case by a county, we don't have the ability to

18   control the counties and what they are necessarily producing.

19   In fact, Bartow County produced something today, and we didn't

20   even know about it.

21             And so we want to be able to mark that confidential

22   when we do find out about it, if it actually needs to be

23   confidential.  And by allowing us to mark it confidential and

24   if the plaintiffs then disagree, we can go through the dispute

25   resolution process set out in the protective order.

1          But to just deem something that has been -- that has

2     been produced now as deemed a public record and it is no

3     longer -- we can no longer try to maintain the confidentiality

4     over is our concern.  And we think that the protective order

5     has a process in it that if the plaintiffs disagree over

6     confidentiality designation we can go through the dispute

7     process in the protective order.

8          MR. CROSS:  Your Honor, I want to make --

9               **(Unintelligible crosstalk.)**

10          MR. BROWN:  I want to make sure the issues are clear

11    because we are bleeding several issues together.  The first

12    issue is whether or not the protective order ought to have

13    retroactive effect and to be able to cover a universe of

14    information regardless of when or even whether it was produced

15    by a party.  And I think no protective order does that.  And

16    that it ought to be explicit that this one does not.  That is

17    the first issue.

18          The second issue is whether or not it is explicit on

19    the first page of the protective order that we have all agreed

20    to that if a third party wants to designate something as

21    confidential they may do something under the protective order.

22    They may do it.

23          What the state wants to be able to do is to sort of

24    reach across the table and intercept documents that other third

25    parties are quite willing to share with the public or with the

1    plaintiffs and to capture those sort of in mid-discovery and

2    stamp them confidential.

3           And I have never heard of that happening and don't

4    know mechanically how that could ever happen.  So we would

5    strenuously object to that in that if somebody is releasing

6    something that the Secretary of State doesn't want them to that

7    is between the Secretary of State and whoever that third party

8    is.  They don't get to sort of intercept discovery like that.

9    Then the third -- so those are the first two.

10          The third has to do with the attorney's eyes only

11   provision, which the Coalition plaintiffs don't want at all.

12   It is not appropriate for this kind of information.  There

13   should be one singular confidential designation and that --

14          THE COURT:  Well, let me just say I have never heard

15   of an attorney's eyes only that was not attorney's eyes only or

16   with their expert on the other side of it.  I mean, you have --

17   with the greatest of respect to your clients, the fact is that

18   they are committed activists in this area.  And they have a --

19   hats off to them for their activities and their concerns.

20          But they don't have the same obligations on them in

21   terms of confidential information that you might or somebody

22   who is a direct agent like an expert who works in a very secure

23   field.

24          MR. BROWN:  Your Honor, let me explain sort of the

25   background of that provision.  We took the draft protective

1    order from the protective order that was entered in the Common

2    Cause case.  That was our template.  And that had a similar

3    provision that had two Common Cause activists on it.

4          Like I said, we don't like the attorney's eyes only

5    designation at all but figured, well, if we can get our client

6    on there we didn't -- it wasn't as big a deal.  So I'm just --

7    we're not going to fight over something that has no material

8    impact.  But that is certainly the source of the -- that

9    agreement and the terms.

10          We would much prefer not having an attorney's eyes

11    only provision because an attorney's eyes only provision in my

12    experience relates to trade secrets when the disclosure to the

13    client itself causes damage.  And confidentiality provisions

14    are designed for information which damage does not happen when

15    you disclose it to the other party.  It happens when that party

16    discloses it to the world.

17          So it just sort of conceptually does not belong in a

18    case other than trade secrets where you have got competitors

19    suing each other.  That is our background on the attorney's

20    eyes only provision.

21          THE COURT:  Mr. Russo or Mr. Tyson, what is the

22    concern about disclosing information to the plaintiffs' experts

23    who work with secure data systems and secured data all the time

24    and are very well aware of their obligations in this area and

25    their own professional standing depends on maintaining those

1    obligations?

2         MR. RUSSO:  Your Honor, this is Vincent Russo.  I

3    don't think with respect to the attorney's eyes only provision

4    that we had a concern particularly with the experts.  I'll

5    defer to Fulton County on some of this issue.

6         THE COURT:  Well, let me just say -- let me just

7    finish the data system.  I mean, if you were to show the

8    information to the -- the data system and the database that we

9    were talking about, one or -- both or one like -- let's just

10   start off with the GEMS database.

11        Is there -- what is the reason you would believe that

12   the plaintiffs' experts would expose you to hacking or would do

13   something that would compromise themselves the system or create

14   trouble?

15        MR. RUSSO:  Yes, Your Honor.  I think our concern, of

16   course, is that the information gets put on their server at the

17   University or wherever they are working and someone else --

18   grad students end up taking that information and using it or

19   leaves it exposed.  And so then that information is out in the

20   public sphere, you know, especially when we get into the GEMS

21   database.

22        Yes.  We have talked about this -- it is the roadmap.

23   And, you know, the whole point of keeping that information out

24   of the public realm is so that nobody has the roadmap so they

25   easily write or more easily write malware that could infect the

1    system.

2              DR. HALDERMAN:  May I -- this is Dr. Halderman.  May

3    I suggest respectfully that we could address those concerns, I

4    believe, by analyzing the data on an air-gapped system in an

5    independently secured room where others not related to the case

6    wouldn't have physical access to it and where it would be

7    electronically safeguarded against any kind of intrusion.

8              MR. RUSSO:  Can you repeat that proposal?

9              DR. HALDERMAN:  I think we can largely mitigate these

10   concerns, at least reduce them below the threshold that the

11   danger already exists in existing GEMS servers maintained by

12   the state if we apply -- if we apply both a physically

13   separated facility and a completely disconnected system.

14             MR. TYSON:  So essentially -- this is Bryan Tyson.

15   So essentially duplicate our current setup in terms of how we

16   protect the information?  Card key access?  I think Michael

17   Barnes testified yesterday it is only five people.  But I think

18   that is consistent with our current setup.

19             DR. HALDERMAN:  Let's propose -- let's propose

20   either a card key or an independently locked door on a separate

21   security key from the rest of the building with a video camera

22   on the work station and a disconnected work station.

23             Would that be roughly equivalent or greater than the

24   normal security that is applied?

25             MR. TYSON:  Merritt -- Mr. Beaver, do you want to

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 1   answer that in terms of what our current security is?  I think

 2   that's less than we currently do.  But it is close.

 3              THE COURT:  Mr. Beaver, are you going to respond or

 4   are you going to talk to your counsel and at least respond via

 5   that way?

 6              MR. RUSSO:  Yes, ma'am.  Sorry about that.  Go ahead,

 7   Merritt.

 8              MR. BEAVER:  I think anything more than looking at it

 9   within our environment means it is out of our environment.  No

10   matter what people say, they have got to control -- we don't

11   know what their controls are.  But we can't -- I can't sit in

12   front of a judge and say -- answer the question how could it

13   have gotten out.  If I said, well, I did release it, and they

14   said it was safe but now I can't explain how it got out there.

15              So anything less or anything more than looking at it

16   in our environment would still leave us exposed.

17              THE COURT:  Are you able to make it available to the

18   experts in your environment if they come -- I mean, do you have

19   actual -- a capacity to do that?

20              MR. RUSSO:  Well, Your Honor, I think some of that

21   would depend on are they looking to run software on the system

22   or what kind of protocol would be around that process.  Just

23   look and our folks are there -- I think one of Judge Grubbs --

24   her points in the case before her, if we were going to let them

25   look at stuff, our folks had to be the ones touching it.  Their
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1    folks couldn't touch it.  At least the Coalition had agreed to

2    that in that case also.

3            But I think we would need to have some protocol

4    around what they would be doing or whether our folks would be

5    the only ones touching the system and they are just there to

6    watch.

7            THE COURT:  Let me just say there are different

8    focuses of this lawsuit versus a challenge in an election and

9    also the time frame that she had to deal with.  So I respect

10   she did everything she could that she thought was proper in

11   that time frame.

12           But you don't -- I mean, let's say you made a copy of

13   whatever you had as if you had another computer doing this so

14   that it wouldn't in any way interfere with your functioning and

15   your system.  Could they do it basically in your quarters so it

16   would be basically the same conditions?  And maybe that is too

17   much of a layperson's question.  But I think you get the drift

18   of what I'm saying probably.

19           MR. RUSSO:  So I'm trying to make sure I understand

20   exactly what we're talking about here.  So they would come --

21   they would be copying our system.  I think we would have a

22   concern with the copying.  We would be copying.

23           THE COURT:  You would be copying.

24           DR. HALDERMAN:  It would create --

25                   (Unintelligible crosstalk.)
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1            MR. RUSSO:  We would create a separate duplicate

2   system.

3            DR. HALDERMAN:  A mirror of the system -- the GEMS

4   system.  Hold on a second.

5            MR. RUSSO:  Your Honor, obviously our folks -- we're

6   concerned we're expanding even farther where we were before

7   because previously we were just talking about the GEMS

8   database.  Now we're talking about copying the system.

9            THE COURT:  I'm just -- let me just say I'm not

10  trying to do any one thing.  I'm trying to throw out some other

11  ideas that could be massaged by people who understand the

12  issues probably better than me and how to do this in a way that

13  would satisfy some of your concerns but also actually deal with

14  the gravamen of also what the plaintiffs' claims are.

15           DR. HALDERMAN:  Well, Your Honor, I gather that what

16  you are suggesting -- I think it is potentially a reasonable

17  proposal -- is to have a separate work station in a facility of

18  the State of Georgia's under Georgia's control where we

19  could -- the state could copy the data that we're asking for on

20  to a separate system or machine and we could go in and perform

21  the analysis ourselves on this independent computer there.

22           And that way there is no -- then it would be

23  protected to the same extent that it is in Georgia's existing

24  system.  Is that -- is that what you were suggesting?

25           THE COURT:  Yes.

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 1              DR. HALDERMAN:  And I think we could perform the

 2    analysis under those conditions.  Although I think we could, in

 3    fact, protect the data as well or better at our own laboratory

 4    facilities where we routinely do deal with extremely serious

 5    vulnerabilities in some of the internet's most -- most

 6    dangerous malicious software.

 7              But if the state insists, I think it would be

 8    possible to perform the analysis on an independently setup

 9    computer in their facility.

10              MS. CHAPPLE:  Your Honor, this is Catherine Chapple.

11    I think we would also want to have assurance that they would

12    give Dr. Halderman and Mr. Bernhard the access and time that

13    they needed to do the analysis that they need to do.  That it

14    wouldn't be an instance where our experts were told that they

15    only had a certain amount of time.

16              THE COURT:  These are details that we'll put off for

17    now.  All right.  I mean, I understand that, the whole purpose

18    of this, especially if he doesn't have the computer to work on.

19    Yes.  But let's just --

20              MS. CHAPPLE:  Sorry, Your Honor.

21              THE COURT:  That is all right.  I don't mean to jump

22    on you about it.  But I'm just trying to get any -- any sense

23    of what could be done here.

24              MR. RUSSO:  Your Honor, I think we would want to get

25    a better understanding of what they mean by perform the
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 1    analysis on the machine and what tools they expect to be
 2    introducing or -- I mean, we would be concerned about someone
 3    introducing anything into the machines.
 4              MR. BEAVER:  It would have to be done based on what
 5    is in the environment.  As soon as you introduce other tools,
 6    you, of course, bring the opportunity to bring something
 7    foreign into that environment.
 8              DR. HALDERMAN:  Perhaps the state misunderstands the
 9    proposal.  We're talking about having a work station available
10    on which we can perform forensics and other tests on files
11    provided to us by the state.
12              MR. CROSS:  And the key point just to add -- this is
13    David Cross -- is this is a stand-alone work station.  So it is
14    not connected to the actual GEMS server.  It would be whatever
15    room the state sets up as a stand-alone distinct machine that
16    is a mirror image of the GEMS server so that it wouldn't matter
17    what tools Dr. Halderman or Mr. Bernhard bring in because they
18    can only affect what is sitting on that stand-alone machine.
19    It is not connected to the internet.  You can't infect
20    anything.
21              THE COURT:  Well, it sounds like that is a
22    potentially reasonable alternative I have to say, and I'm not
23    expecting everyone to make a decision on the spot on a Friday
24    afternoon.  But I am expecting you to think about it seriously
25    and -- but I do want to address -- I guess that was
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1    Mr. Beavers' comment.  But it might have been Mr. Russo's

2    comment.

3             Are we talking about when he asked -- one of you

4    asked, at least, were you talking about the GEMS database or

5    were you talking about the actual other operational -- the

6    server functioning?  Is that what I understood you were asking,

7    one of you at least?

8             MR. RUSSO:  Yes, ma'am.  That is what we were trying

9    to get an understanding of.

10            THE COURT:  All right.  So knowing that -- I know

11   that the plaintiffs would like the whole deal.  But,

12   Dr. Halderman and Mr. Bernhard, would it still be of value to

13   you, first of all, to do it just simply with the GEMS database

14   or not?

15            DR. HALDERMAN:  This is Dr. Halderman.  The GEMS

16   database would be of value to us.  We would also like to

17   examine the rest of the server configuration and the data on

18   the GEMS server because the GEMS database is one in separate

19   places where malware could reside if the state says it is sort

20   of the nexus or the roadmap or the nerve center of the system.

21   So that might be the first place that would be fruitful to

22   examine.

23            THE COURT:  What if you were allowed to do -- look at

24   the database and then they gave you whatever -- I mean, I

25   realize it is not what -- all the things you want, not quite
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 1   understanding what the macros are, but as a supplement to that.
 2             DR. HALDERMAN:  The macros are actually not a
 3   substantial utility to us.  I presume that that is a standard
 4   check that the state runs in the normal course of business and
 5   that it has already shown that there is not an infection there.
 6             MR. CROSS:  If I understand Your Honor's question
 7   right, if the question is is the database itself a valuable
 8   starting point, the answer is definitely yes.
 9             THE COURT:  If you were to do it under those
10   protected circumstances?
11             MR. CROSS:  Yes.  I mean the short answer is yes.  I
12   guess I would want to explain though that, again, if we're
13   going to go to the trouble of looking even just at the database
14   on a stand-alone computer under the conditions we have
15   described, I would ask, Your Honor, we should just go ahead and
16   take the mirror image of the server because those conditions
17   are so secure that there is no reason to break it up.  And it
18   is just going to create inefficiency and more work if we first
19   look at the database in that situation and then later have to
20   come back and create a whole new station that has the full
21   configuration of the server.
22             I mean, if we're going to go to those extreme
23   conditions, I would respectfully ask that we just do it all at
24   once and be done with it.  If we're just getting the database,
25   then I would submit we don't need to do the level of
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1    protections that they are talking about.

2            MR. BROWN:  Your Honor, this is Bruce Brown.  I have

3    to concur with what Dave said to this extent.  The GEMS

4    database is set up in 159 counties.  It is a public record in

5    other states.  It is not the kind of data that needs the

6    protection anything close to what Dr. Halderman is describing.

7            Now, in terms of it is an order of magnitude and that

8    is why we chose it initially as the first thing that we wanted

9    discovery on because we didn't want to fight this thing on a

10   big forensic battle that, frankly, we had just gone through

11   with them in the lieutenant governor's case.  We thought let's

12   just ask for the low hanging fruit, which is the GEMS database.

13   That will be a good start to try to get an overview of the

14   system and maybe spot some vulnerabilities or some

15   configuration errors.

16           And so it remains a good starting place.  And we can

17   get those by CD.  We don't need to have a safe room or anything

18   else.  And we can evaluate them.  And then that would probably

19   speed up what substantive review that could be entertained or a

20   concurrent review, even better, of the actual GEMS server.

21           But I think the difficulty that we had in our

22   discussion with the experts is that it is almost in a situation

23   where if what we are seeking discovery of is likely to reveal

24   malware or a vulnerability then the state is going to take the

25   position that it is beyond discovery every time, not just for

```
 1    the GEMS database.  But you will see that in discovery in this
 2    case, I think, over and over again.
 3            And so that is not a position that we feel
 4    comfortable arguing because it just can't be so or else as
 5    Justice Nahmias said in our oral argument in the other case it
 6    is just this black box that the state gets to know how the
 7    votes are counted and no one else does.
 8            And so I think our discovery is limited.  We have cut
 9    it back to 25.  If they have particular fields, like personal
10    information, that can be redacted.  And we will treat them just
11    as carefully as they require the counties to treat them.  And
12    whether that is done concurrently or in advance of making a
13    full image of the GEMS database -- you know, Mr. Cross has got
14    a good point.  We'll take the GEMS database separately now.
15            Thank you.
16            THE COURT:  Well, let me ask you this.  We're talking
17    about the actual functioning of the GEMS server and the way it
18    operates.  How further, Dr. Halderman, are you suggesting -- if
19    you were to happen to be in their shoes, what would you want,
20    in fact, to be able to protect -- when you have responsibility
21    for protecting the system, what would you want under these
22    circumstances?
23            They still have to run an election.  Of course, it is
24    always possible as the plaintiffs have pointed out that things
25    won't be ready by the point of the primary or -- so it becomes
```

| | |
|---|---|
| 1 | all the more important.  So I may have unfairly put the shoe on |
| 2 | your foot about it. |
| 3 | DR. HALDERMAN:  Yes.  No.  I think that is a fair |
| 4 | question.  And I think that although the -- the information -- |
| 5 | the most sensitive risk is that information on the real GEMS |
| 6 | servers will be changed, more so than information on the GEMS |
| 7 | servers will leak. |
| 8 | I think information on the GEMS servers needs to be |
| 9 | protected.  And I think that the protective order is a good |
| 10 | place to work out the logistics of that.  But the logistics to |
| 11 | me, the most important things, are to ensure that the data is |
| 12 | transferred in an encrypted way.  Wherever it will be analyzed, |
| 13 | that it is analyzed on a system that is physically secured and |
| 14 | that physically secured system is disconnected from the |
| 15 | internet, in addition to the controls that the protective order |
| 16 | places on who would have access to that -- to that machine. |
| 17 | But that seems like -- that is a fairly standard |
| 18 | protocol for handling other kinds of dangerous or sensitive |
| 19 | software that, if released, could cause harm. |
| 20 | That is what we do to protect against -- to protect |
| 21 | actual virus samples.  That is what we do sometimes to protect |
| 22 | the most severe vulnerabilities we discover is just make sure |
| 23 | that they are stored in encrypted form, that they are kept on |
| 24 | systems that are not connected to the internet, and to make |
| 25 | sure that those systems are physically secured. |

1           THE COURT:  All right.  Let me just -- we were on the

2    protective order.  And I had gotten everyone's position a

3    little more fully on the retroactivity issue and the state

4    wanting to assert an interest also to protect itself from the

5    disclosure of a third party.

6           I'm looking to see if there is anything else.  I

7    would like the state to think about this alternative that we've

8    been discussing about the -- having this done in a state

9    facility on a mirrored machine computer.  And obviously there

10   are two levels of this.  And I hear what the plaintiffs are

11   saying.  And I'm not -- I haven't necessarily heard anything

12   further from plaintiffs as to any sort of heightened obligation

13   of security relative to the experts who are using -- might be

14   doing this if they were actually looking at the server relative

15   to your desire to include your clients in the loop about

16   whatever they are doing.

17          And I think that I would be -- it is really no

18   disrespect to the clients.  But I just -- I think under the

19   circumstances I couldn't probably authorize that.  I don't see

20   any need to.  I mean, the experts are going to do what they are

21   going to do and be looking at it.

22          But all of the details of all of that, as they are

23   running it, doesn't seem to be essential to be sharing with

24   clients until we -- obviously they will come to an opinion.

25   And that is something else when we get to the point that I have

```
1    an expert opinion.
2              MR. CROSS:  Your Honor, this is David Cross for the
3    Curling plaintiffs.  We have no objection.  We certainly
4    understand and appreciate that.  Our clients are fine with
5    that.
6              MR. BROWN:  Your Honor --
7                        (Unintelligible crosstalk.)
8              MR. BROWN:  Your Honor, our client has no need or
9    desire to be a party to the examination of the server.  If
10   we -- if you -- if I could explain better what the GEMS
11   database does, it is an Access database that is very much a
12   user-oriented application involving elections and how elections
13   are constructed.
14             And the knowledge of my client in terms of that field
15   of information is necessary for us to be able to review the
16   GEMS database itself.  And that is why we would need to have my
17   client, Ms. Marks, included with any circle of people who were
18   reviewing the GEMS database.  It is also simply a matter of
19   resources that we have to get this work done, quite frankly.
20             THE COURT:  Are you saying she would need to be in
21   the room while they are looking at the database and they are
22   running the tests on the database?
23             MR. BROWN:  She would not need to have --
24             THE COURT:  So what are you saying?  I mean, because
25   it wasn't like you wanted a printout of the database.
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1          MR. BROWN:  I may not -- we may have to put something

2     in writing to make sure it is clear.  Because this is sort of

3     overtaken a little bit of my own understanding of how you could

4     view one and not the other.

5          But what we would want Ms. Marks to have access to

6     would be the functionality of the GEMS database, which is the

7     same thing that a county clerk in Georgia would have access to.

8     And we want to see the same thing that someone in an elections

9     office in Morgan County would have access to.  And they, of

10    course, don't have access to the kinds of things that

11    Dr. Halderman is talking about.  So that would be sort of a

12    rough way of explaining it.  We would need it to be able to get

13    our work done with our resources and would appreciate that.

14         THE COURT:  When it is made available in Morgan

15    County -- and the state may be -- I assume can answer that

16    question whether directly Mr. Beaver or his giving the

17    information to counsel.

18         What does that mean?  Are they -- when the county

19    elections officer is looking at it, is he or she looking at it

20    on a computer and able to do all the things that Mr. -- that

21    the plaintiffs want to do or are they looking at it -- pulling

22    it up in some other less informative mode but that you can run

23    it?

24         MR. TYSON:  Yes, Your Honor.  This is Bryan Tyson.

25    We had an extensive discussion of this in Mr. Barnes'

```
 1    deposition yesterday.  And the county election officials have

 2    separate GEMS computers that house the Access database.  But an

 3    important distinction is that the county computers do not have

 4    Microsoft Access installed on them.  So the county officials

 5    cannot open the database in Microsoft Access.

 6              They use the GEMS system that then provides the

 7    interaction to the Access database.  But they do not and cannot

 8    open it because those computers are not connected to anything

 9    and Microsoft Access is not installed on those computers.

10              THE COURT:  Okay.  So back to you, Mr. Brown.  I

11    mean, is that -- if you want to see it the way that the Morgan

12    County elections is, then you would be looking at it and your

13    client would be looking at it --

14              MR. BROWN:  Well, I think --

15              THE COURT:  -- in a separate way without access --

16    without the --

17              MR. BROWN:  What we would want is -- what we have

18    asked for is to have it saved as a Microsoft Access database.

19    Then we simply open it in Microsoft Access and be able to

20    analyze it like that.

21              THE COURT:  Well, I just don't understand why your

22    client has to be part of that, frankly.  I mean, you originally

23    say you want it just like the Morgan County head of elections

24    is.  But then you actually wanted something else, which is what

25    basically I'm saying, well, I can understand why the experts
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1    might need it but I'm not sure why that makes -- why your

2    client has to be part of that process.

3           All right.  Well, you can all think about that.  And

4    the state should think what -- what we have been discussing.

5    And I would like to know by 11:00 on Monday what your

6    respective positions are.

7           MR. BROWN:  Thank you, Your Honor.  We will brief the

8    issue of who should have access and why to the GEMS database

9    and also provide a little bit more information on the GEMS

10   database and how it is helpful and should be disclosed.  But

11   thank you very much for your time.

12          THE COURT:  And if the state would indicate -- mull

13   over what we have been discussing and indicate its -- its

14   position as well by 11:00.

15          MR. RUSSO:  Yes, ma'am.  We will do that.  This is

16   Vincent Russo.  We will do that and follow up by 11:00.

17          Should we just email your clerk, or would you --

18          THE COURT:  You can file it under seal.  I mean, it

19   is just the simplest thing at this point given the subject

20   matter.  Everyone can file it under seal, and then we'll --

21   once I see it, then I'll decide whether all of it needs to be

22   under seal.

23          MR. RUSSO:  Yes, Your Honor.

24          THE COURT:  And if there is something that is

25   relevant from the deposition, I guess you'll need to file the

1   deposition.

2          MR. RUSSO:  Just so we fully understand here, you're

3   referring to Michael Barnes' deposition?

4          THE COURT:  That is what I understood from the state

5   was that there was a deposition that dealt with these issues.

6          MR. RUSSO:  Correct.

7          THE COURT:  Okay.  I'm just looking at the protective

8   order statement so I can see if there was anything else I

9   needed to ask you about.

10          All right.  I think I have -- if there is anything

11   else that arose today that you have further information about

12   or a modified position on, please provide that for me.  And if

13   either of the experts have anything -- further clarification

14   that they want to provide, they should -- you should attach an

15   affidavit or from Mr. Beaver.

16          All right.  Thank you very much.  Have a good

17   weekend.

18          MS. CHAPPLE:  Thank, Your Honor.

19          MR. BROWN:  Thank, Your Honor.

20          **(The proceedings were thereby concluded at 4:25**

21          **P.M.)**

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 1                      C E R T I F I C A T E

 2

 3   UNITED STATES OF AMERICA

 4   NORTHERN DISTRICT OF GEORGIA

 5

 6       I, SHANNON R. WELCH, RMR, CRR, Official Court Reporter of

 7   the United States District Court, for the Northern District of

 8   Georgia, Atlanta Division, do hereby certify that the foregoing

 9   53 pages constitute a true transcript of proceedings had before

10   the said Court, held in the City of Atlanta, Georgia, in the

11   matter therein stated.

12       In testimony whereof, I hereunto set my hand on this, the

13   29th day of June, 2019.

14

15

16

17   _____
     SHANNON R. WELCH, RMR, CRR
18   OFFICIAL COURT REPORTER
     UNITED STATES DISTRICT COURT
19

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21

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EXHIBIT

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 1           IN THE SUPERIOR COURT OF THE STATE OF ARIZONA

 2                 IN AND FOR THE COUNTY OF PIMA

 3

 4

 5    DEMOCRATIC PARTY OF PIMA        )
      COUNTY,                         )
 6                                    )
             Plaintiff,              )
 7                                    )
             vs.                      ) No. C2007 2073
 8                                    )
      PIMA COUNTY BOARD OF            )
 9    SUPERVISORS, a body politic;    )
      and BETH FORD, PIMA COUNTY      )
10    TREASURER, in her official      )
      capacity as Pima County         )
11    Treasurer,                      )
                                      )
12           Defendants.             )
                                      ) (Hon. M. Miller)
13

14

15

16                 DEPOSITION OF MERLE KING
                     November 8, 2007
17                       9:02 a.m.
                     Tucson, Arizona
18

19

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21

22
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2

1                          I N D E X

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         EXAMINATION
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     5   By Mr. Thomas Denker
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     8   By Mr. William Risner
93

     9

    10
                           E X H I B I T S
    11

    12             (No exhibits marked.)

    13

    14

    15

    16

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18

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22

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24

25

3

1          APPEARANCES:

2
           Mr. William Risner, Attorney at Law
3          Risner & Graham
           100 North Stone Avenue, Ste. 901
4          Tucson, Arizona  85701
           For Plaintiff

5

6          Mr. Thomas Denker, Attorney at Law
           Ms. Karen Friar, Attorney at Law
7          Pima County Attorney's Office
           32 North Stone Avenue, Ste. 2100
8          Tucson, Arizona  85701
           For Defendants

9

10
           ALSO PRESENT:  Mr. Jim March
11                        Mr. John Moffatt

12
                    *     *     *     *
13

14

15             BE IT REMEMBERED that pursuant to Notice of

16       Taking Deposition in the above-styled and numbered

17       cause, of the deposition of MERLE KING was taken upon

18       oral examination at the offices of Risner & Graham,
100

19       North Stone Ave., in the City of Tucson, County of
Pima,

20       State of Arizona, before me, Mary Meyer, RPR,
Certified

21       Reporter 50225, in and for the State of Arizona, on
the

22       8th day of November, 2007, commencing at the hour of

23       9:02 a.m. on said day.

24

25                        *    *    *    *


4


1                          MERLE KING,

2        having been first duly sworn, was examined and
testified

3        as follows:

4                          EXAMINATION

5        BY MR. RISNER:

6           Q.  Tell the judge your name.  I'm not sure if that

7        got on the record.

8          A.   I'm Merle King.

9          Q.   And I want to ask you a little about your

10     background.   So, would you describe your educational

11     background.

12          A.   I have a bachelor's degree in biology, a
master's

13     in business administration, and a master's in business

14     information systems.

15          Q.   And where did you get this business

16     administration, business information systems master's?

17     I mean --

18          A.   Georgia State University, Atlanta, Georgia.

19          Q.   In what year?

20          A.   1989.

21          Q.   And if you could give me some work history,

22     please.

23          A.   I am an associate professor of information

24     systems.   I've been in the professorate since 1979.   I

25     am past chair of the Department of Computer Science
and


5


1     Information Systems, and currently the executive

2     director of the Center for Elections Systems.

3          Q.   And as an associate professor, that's at

4      Kennesaw?

5          A.   That's correct.

6          Q.   And do you teach any at Kennesaw?

7          A.   I teach infrequently.  It's been a year since I

8      taught a course.

9          Q.   What kind of courses have you taught?

10         A.   I teach graduate courses in legal issues and in

11     information technology and information technology

12     leadership.

13         Q.   What are -- what areas are you an expert in?

14         A.   I have experience in election technologies,

15     election administration, computer science education.

16         Q.   What's your level of expertise with software?

17              MR. DENKER:  Objection, form and foundation.

18         A.   What software?  Which software?

19         Q.   (By Mr. Risner)  Well, let's say the GEMS

20     software.

21         A.   I'm familiar with GEMS software, with its

22     architecture and its function.

23         Q.   And how did you get that familiarity?

24         A.   The State of Georgia has used GEMS since 2002.

25     Through our center's use of that software, I've gained

6

1       familiarity with them.

2            Q.   And is that through your using of the software?

3            A.   That's correct.

4            Q.   Are you -- have you done a source code review
of

5       that software?

6                 MR. DENKER:   Objection, form and foundation.

7            A.   I have not done a source code review; however,
I

8       have looked at the source code for the software.

9            Q.   (By Mr. Risner)   What does that mean?

10           A.   Well, a source code review is a formal process
of

11      reviewing the entire body of code --

12                (Mr. John Moffatt enters conference room.)

13                -- the genesis of the body of code, the

14      functionality of the body of code.  So, I have not
done

15      a source code review of the software.  I have,
however,

16      inspected the source code when I was curious about how
a

17      particular function worked.

18           Q.   (By Mr. Risner)   What -- I don't understand
what

19      you mean when you inspected it because you were
curious.

20      What does that mean?

21           A.   Looking at the source code to understand how an

22      operation works within the system.

23          Q.   And how did you get that source code?

24          A.   Kennesaw State is the escrow agent for GEMS in

25      the State of Georgia.  The source code was delivered
to


7


1       us from what, at that time, was called the ITA,

2       Independent Testing Authority.

3           Q.   Which ITA?

4           A.   Cyber.

5           Q.   And when was that delivered to you?

6           A.   I don't know.

7           Q.   And what was it you were looking for when you

8       looked in --

9           A.   I don't recall the specifics.

10          Q.   Was it a particular thing that you were looking

11      for?

12              MR. DENKER:  Objection, form and foundation.

13          A.   I don't recall whether it was specific or if it

14      was a general.

15          Q.   (By Mr. Risner)  And what -- when was it?

16          A.   I don't recall.

17          Q.   Have you ever consulted for Diebold
Corporation?

18          A.  I have not.

19          Q.  So they've not paid you at any time?

20          A.  No.

21          Q.  In this case, you've been hired, have you not,
by

22      Pima County for some consulting and testifying?

23          A.  We have discussed.  I have not signed a
contract

24      with Pima County.

25          Q.  So, what have you discussed with Pima County?


8


1              MR. DENKER:  Objection, form and foundation.

2          A.  Reimbursement for expenses.

3          Q.  (By Mr. Risner)  And how about your time?  Are

4      you being paid separately for that?

5          A.  I've asked that my time be reimbursed for a
total

6      of $10, a check payable to the foundation at my

7      university.

8          Q.  And who contacted you from Pima County?

9          A.  Karen Friar.

10          Q.  And do you know how she got your name?

11          A.  I believe it was from Brad Nelson.

12          Q.  And do you know how Brad Nelson knows of you?

13              MR. DENKER:  Objection, form and foundation.

14          A.   Brad was at a conference at which I made a

15     presentation.

16          Q.   (By Mr. Risner)  What conference was that?

17          A.   I think it was CERA, C-E-R-A.

18          Q.   What's that mean?

19          A.   It's the organization that provides continuing

20     education to county -- I'm sorry -- to election

21     officials.

22          Q.   And what was your presentation about?

23          A.   Ballot building.

24          Q.   And when was that made?

25          A.   I'd have to consult my calendar.  It was
sometime

9

1      within the past 18 months.

2          Q.   And were you paid separately for that

3      presentation?

4          A.   I was not paid nor reimbursed for travel

5      expenses.

6          Q.   So why are you appearing here for just 10 bucks

7      for your time?

8          A.   Well, I was asked to, is one.  The second is
that

9      I'm concerned about the integrity of elections.

10          Q.   What do you mean by that?

11          A.   I'm interested in doing what I can to make sure

12     that elections run smoothly, not only in the State of

13     Georgia, but wherever I can provide advice to a

14     jurisdiction.

15          Q.   What do you mean by "smoothly"?

16          A.   Well, that's a good question.  "Smoothly" means

17     without contesting results, without anomalies in the

18     process.

19          Q.   And do you have -- what is your understanding
of

20     the issues involved with this lawsuit that would
impact

21     the smooth operation of elections?

22          A.   I'm not sure I understand your question.

23          Q.   Well, I take it that there's something about
this

24     case that you feel impacts that goal of smooth

25     operations, and I'm wondering what that is.


10


1          A.   Well, I don't -- I don't know that the aspects
of

2     this case impact my impression of smooth operations.

3               The case, as I've read, it focuses on the
request

4        for a copy of the GEMS database.  The release of GEMS

5        databases to the public gives me concern.

6            MR. RISNER:  Okay.  Incidentally, I'd like the

7        record to reflect that John Moffatt is present.

8        Q.  (By Mr. Risner)  What is it about the release
of

9        the GEMS database that gives you concern?

10       A.  Because of information that's contained within

11       the GEMS database, specifically user IDs, passwords.

12       Q.  And what's the problem with that?

13       A.  Organizations typically work diligently to

14       protect the security of user IDs and passwords.

15       Q.  And what else would give you concern about the

16       release of the database?

17       A.  The structure of the database is consistent

18       through all jurisdictions that use GEMS, so the

19       revelation of one jurisdiction's database structure

20       reveals information -- potentially reveals information

21       about other jurisdictions.

22       Q.  Any other problems you see with releasing the

23       database?

24       A.  There are potential intellectual property
issues,

25       but that's jurisdiction dependent, and I'm not
familiar

11

1        with Arizona law to know whether that's an issue here.

2            Q.   So that's -- those things are your concerns?

3            A.   Yes.

4            Q.   Okay.  And have you -- what have you been asked

5        to do in this case?

6            A.   Well, I've been asked to give an opinion on

7        whether the GEMS database constitutes a computer
program

8        as defined by Arizona statute.

9                (Karen Friar enters conference room.)

10           Q.   (By Mr. Risner)   And any other opinions you've

11       been asked to give?

12           A.   I've been asked to give an opinion on the

13       security implications of releasing the database.

14           Q.   Anything else?

15           A.   Not that I can recall.

16           Q.   What is your opinion, then, on whether the GEMS

17       database constitutes a computer program as defined by

18       Arizona statute?

19           A.   I believe that it does.

20           Q.   And which Arizona statutes are you -- have you

21       consulted?

22           A.   Perhaps you're more familiar with the code.

23       (Hands document to Mr. Risner.)

24          Q.   You've handed me what I believe is ARS 16-444,

25     the definitions applicable, generalized.   Which one of


12


1      those definitions have you looked at?

2          A.   Definition four.

3          Q.   Four.

4          A.   Paragraph four.

5          Q.   And, okay, so why do you think that a GEMS

6      database constitutes a computer program as defined by

7      that?

8          A.   I'm sorry.   Could you repeat the question?

9          Q.   Yeah.   So why do you think a GEMS database

10     constitutes a computer program as defined by that

11     statute?

12         A.   Computer program includes all programs and

13     documentation adequate to process the ballots.   You

14     cannot process the ballots without GEMS.

15         Q.   Anything else?

16         A.   No.

17         Q.   And the security implications, what's your

18     opinion on that?

19         A.   The release of the GEMS database reveals the

20     structure of the database.   The revelation of the

21      structure may give hackers insights into how to

22      construct a workable attack against the GEMS system.

23          Q.  Anything else?

24          A.  No.

25          Q.  Let me go back to a couple of these things.
You

13

1       expressed concern that the turning over of the
database

2       would reveal user IDs.

3           A.  That's correct.

4           Q.  Is that correct?

5           A.  (No oral response.)

6           Q.  Yeah.  How difficult is it to change user IDs?

7               MR. DENKER:  Objection, form and foundation.

8           A.  To change user IDs in GEMS?

9           Q.  (By Mr. Risner)  Yeah.

10          A.  That is a normal procedure, a normal function

11      that's made available in the system, so it's not

12      difficult.

13          Q.  And in good computer security practice, should

14      user IDs be changed from time to time?

15              MR. DENKER:  Objection, form and foundation.

16          A.  That is an accepted practice in security.

17      However, revealing the syntax rules for the user IDs

18      should never be revealed.

19          Q.  (By Mr. Risner)  What's that mean?

20          A.  For example, if an organization constructs user

21      IDs out of, say, the first letter of the first name
and

22      the last name, that reveals the syntax that may be

23      useable by hackers to launch an attack against the

24      system.

25              So, changing pass -- or user IDs is an accepted


14


1      good practice.  Revealing the syntax for them would be

2      considered poor security.

3          Q.  Have you seen the codes on GEMS user IDs?

4              MR. DENKER:  Objection, form and foundation.

5          A.  Which installation?

6          Q.  (By Mr. Risner)  The encryption process.

7          A.  Have I seen the encryption process?

8          Q.  Yeah.

9          A.  No.  That's not a doable process, but I'm not

10     alone in not having seen it.

11         Q.  Do you know what Pima County uses for user ID?

12         A.  I do not.

13         Q.  And do you know if they have more than one user

14      ID, depending on the person that's operating the

system?

15          A.  I do not.

16          Q.  And the same thing with passwords, do you know

17      what -- whether passwords should be changed regularly?

18          A.  Passwords should be changed regularly.

19          Q.  And is that difficult, also?

20          A.  It is not difficult.

21          Q.  Okay.  So, in terms of the user ID and

passwords

22      as reasons not to give the database to the Democratic

23      Party, are those weighty at all?

24          A.  They are weighty.

25          Q.  Huh?


15


1           A.  They are weighty.

2           Q.  They are?

3           A.  Because it reveals the syntax of the user IDs.

4               MR. DENKER:  Would you reflect a form and

5       foundation objection to that previous question.  Thank

6       you.

7           Q.  (By Mr. Risner)  You mentioned that the

structure

8       of the database is consistent in all jurisdictions.

9      A.   That use GEMS.

10     Q.   Yeah.  So, if the database was revealed here,

11     then that would create a problem other places?

12     A.   That's speculative.  I don't know that it would

13     create problems in other places, but it would give

14     potential hackers insight into the database structure

15     used in other GEMS based jurisdictions.

16     Q.   Are you aware that the Democratic Party in the

17     State of Alaska received a copy of the database?

18     A.   I have read that.  I don't know the details of

19     it.

20     Q.   You think that has created a problem, then,

from

21     giving information to hackers?

22          MR. DENKER:  Objection, form, foundation.

23     A.   I think it increases the risk.

24     Q.   (By Mr. Risner)  Yeah, and if the Pima County

25     Democratic Party got the database, how much increase

16

1      would that be in the risk?

2           MR. DENKER:  Objection, form, foundation.

3      A.   I can't speculate on the perception increase or

4      whatever metric.

5      Q.   (By Mr. Risner)  Yeah.  In terms of the user

ID,

6        is a good practice to have one ID shared by several

7        people or to have individual user IDs?

8            A.   That's a poor practice.

9            Q.   Which one?

10           A.   Having a single ID shared by more than one

user.

11           Q.   Do you know that Pima County uses "admin" as

the

12       user ID only?

13               MR. DENKER:  Objection, form, foundation.

14           A.   That they currently use "admin" only?

15           Q.   (By Mr. Risner)  Yeah.  Yeah.

16           A.   I do not know that.

17           Q.   What do you think about that practice, if

that's

18       the case?

19           A.   Repeat your first question.

20           Q.   Sure.

21           A.   Okay.

22           Q.   If Pima County uses "admin" as the user ID for

23       everyone who's on the computer, is that a good

security

24       practice?

25           A.   On the surface, it would certainly seem not to

17

1       be.   Usually the administrator is a single individual.

2           Q.   What do you know about Arizona's public
records?

3               MR. DENKER:   Objection, form and foundation.

4           A.   I don't know.   I don't know.

5           Q.   (By Mr. Risner)   Yeah.   And what do you know

6       about the security of, or how the security's operated

7       in, Pima County with their election central count

8       computer?

9               MR. DENKER:   Objection, form, foundation.

10          A.   I spent approximately two-and-a-half hours at
the

11      center yesterday and was given a high level overview
of

12      some of the current security procedures at the center.

13          Q.   (By Mr. Risner)   Okay.   And were you informed
of

14      the various changes that had been made within the last

15      couple of years?

16          A.   I was informed of some changes.   I don't know
if

17      I was given the complete list of changes.

18          Q.   And did they mention what role the Pima County

19      Democratic Party had played in increased security in

20      Pima County?

21          A.   I understand the Pima County Democratic Party
was

22      instrumental in raising some of the issues that led to

23      policy changes.

24          Q.  In your state of Georgia, how involved are

25      political parties in ensuring the accuracy of
elections?


18


1               MR. DENKER:  Objection, form, foundation.

2           A.  I would say not much.

3           Q.  (By Mr. Risner)  And at what level are they

4       involved?

5               MR. DENKER:  Objection, form, foundation.

6           A.  I'm -- I can't think of a single instance in

7       which we have had interaction with either the
Democratic

8       or Republican Party on an election issue.

9           Q.  (By Mr. Risner)  Well, in Georgia, who conducts

10      oversight to make sure that the elections are
accurate?

11              MR. DENKER:  Objection, form, foundation.

12          A.  Ultimately, the secretary of state is the chief

13      election officer, and the responsibility for election

14      administration is in the Elections Division of the

15      secretary of state's office, with the exception of

16      municipal elections.

17          Q.  (By Mr. Risner)  At the end of an election, do

18        they audit counties to see -- you know, for instance,

19        take a look at GEMS, to see that it's all operated

20        properly?

21            A.   The secretary of state's office has requested

22        post-election audits on elections over the years.

23            Q.   Okay.  And who does those?  Does your group do

24        it?

25            A.   We provide technical support, but investigators


19


1         within the SOS office conduct the investigation.

2             Q.   What kind of investigations have they done?

3                  MR. DENKER:  Objection, form, foundation.

4             A.   One objection -- or, I'm sorry, one
investigation

5         was on allegations of machines not working properly in
a

6         precinct.

7             Q.   (By Mr. Risner)  Yeah, so what -- what did they

8         do with that, do you know?

9             A.   The machines were quarantined.  Investigators

10        performed tests on the machines.  In that particular

11        case, the complainant failed to show to the

12        investigation, which shortened the investigation

13        considerably, primarily confirming that the machines

14      work as designed.

15          Q.   Yeah.   And when was that investigation, do you

16      know?

17          A.   It was approximately three years ago.

18          Q.   Yeah.   Can you think of any others?

19          A.   Any others that relate to what?

20          Q.   Anything.   You know, just where the secretary
of

21      state -- you said, if I understand you, that the

22      secretary of state can send investigators and do an

23      investigation.

24          A.   That's correct.

25          Q.   And if I understand you, your group that you're


20


1      the executive director of has been the technical
advisor

2      of this.

3          A.   That's correct.

4          Q.   So, I'm asking if you can think of any others,

5      other than the one you just talked about?

6          A.   Most investigations that are initiated by the

7      secretary of state's office deal with voter fraud that

8      deal with paper ballots.   That does not involve our

9      organization.

10          Q.   Yeah.   Yeah.   How do you determine in Georgia

11     whether some insiders in the county haven't rigged the

12     computer to get the results the way they want?

13          MR. DENKER:   Object to form and foundation.

14          A.   That's a very presumptive question.   That's
well

15     beyond the scope of my unit.

16          Q.   (By Mr. Risner)   Excuse me?

17          A.   That is well beyond the scope of my unit.   We
do

18     not do criminal investigations.

19          Q.   How many counties do you have in Georgia?

20          A.   159.

21          Q.   And so do you all just assume that all 159 are

22     not cheating?

23          MR. DENKER:   Objection, form, foundation.

24          A.   I assume nothing.

25          Q.   (By Mr. Risner)   Huh?

21

1          A.   I assume nothing.

2          Q.   Well, who checks to see if there's insiders

3     cheating?

4          MR. DENKER:   Objection, form, foundation.

5          A.   The responsibility for each county election

falls

        6       upon either the superintendent of elections, appointed

        7       by a board of elections in that county, or on the

        8       probate court judge for that county.  That is their

        9       responsibility, to investigate -- at least to initiate

        10      any investigations of impropriety within their
counties.

        11         Q.  (By Mr. Risner)  Okay.  So, if somebody caught

        12      something, they could go to court and ask one of these

        13      superintendents to investigate.  Is that what you're

        14      saying?

        15             MR. DENKER:  Object to form and foundation.

        16         A.  I don't know the procedure that an individual
may

        17      take.

        18         Q.  (By Mr. Risner)  Well, what I'm just wondering

        19      is, as a regular process, is there anyone that audits

        20      and checks to see that the county -- 159 counties are

        21      doing it right?

        22         A.  The superintendent of elections for that
county.

        23         Q.  And do you know what they look at?

        24         A.  I think that would depend upon the allegation.

        25         Q.  Yeah.  So there has to be a specific
allegation,


22

1       in other words?

2           A.  I would think so.

3           Q.  Okay.  And your group doesn't give suggestions
or

4       technical advice or anything like that.  Would that be

5       right?

6               MR. DENKER:  Object to form, foundation.

7           A.  Technical advice to whom?

8           Q.  (By Mr. Risner)  The superintendent of
elections

9       in the various counties.

10          A.  If a request for technical advice comes from a

11      superintendent, we would typically provide that
advice,

12      unless there was some reason given to us by the

13      secretary of state not to.

14          Q.  So, have you ever gotten a request from one of

15      those superintendents of elections for technical
advice?

16          A.  Oh, all the time.

17          Q.  Yeah, in terms of checking to see if insiders

18      have been cheating?

19          A.  No.

20          Q.  Who, under Georgia law, has the right to
observe

21      the counting of the vote?

22              MR. DENKER:  Objection, form and foundation.

23          A.   I would have to consult the election code to
give

24          you the specifics, but generally it's the public.   The

25          public have the right.


23


1          Q.   (By Mr. Risner)   Do you have -- do political

2          parties have any special observation rights?

3          A.   (No oral response.)

4          Q.   Huh?

5          A.   Not that I'm aware of.

6          Q.   Are you aware of what Arizona law provides for

7          rights of political parties to monitor and observe

8          elections?

9               MR. DENKER:   Objection, form, foundation.

10         A.   I'm becoming aware of it, but I'm not

11         knowledgeable of Arizona code in that regard.

12         Q.   (By Mr. Risner)   So who's -- how are you
becoming

13         aware of that?

14         A.   Reading the statutes.

15         Q.   So, have you learned that we have kind of a

16         different system than Georgia?

17              MR. DENKER:   Objection, form, foundation.

18         A.   I'm learning that, yes.

19        Q.  (By Mr. Risner)  In Georgia, your secretary of

20        state, or legislature, somebody decided to buy all

21        direct recording machines, didn't they, for elections

in

22        Georgia?

23            MR. DENKER:  Objection, form, foundation.

24        A.  The State of Georgia uses DREs and optical scan

25        technology to support elections.


24


1         Q.  (By Mr. Risner)  Yeah, and when -- when did

they

2         make that decision?

3         A.  March of 2002.

4         Q.  And Georgia uses all Diebold equipment?

5             MR. DENKER:  Objection, form, foundation.

6         A.  For county based elections, yes.

7         Q.  (By Mr. Risner)  What does that mean?

8         A.  Municipalities have the discretion to hold

9         elections on technologies other than DRE and optical

10        scan.

11        Q.  Okay.  So, cities and towns can use something

12        different?

13        A.  That's correct.

14        Q.  All right.  But the -- if it's a county

election

         15        or state election, they use Diebold equipment?

         16            A.   That's correct.

         17            Q.   And how is that sort of just generally divided
up

         18        between the DREs and the optical scans?

         19                MR. DENKER:   Objection, form, foundation.

         20            A.   Optical scan is used for mail-in, absentee

         21        ballots.   DRE's used for polling place voting and
early

         22        voting.

         23            Q.   (By Mr. Riser)   How is early voting different

         24        than absentee?

         25            A.   Early voting is in person, in a central polling


25


          1        place.

          2            Q.   And when -- what role did you play, if any, in

          3        the decision to use all DREs at the polling places?

          4            A.   No role.

          5            Q.   Were you asked for advice?

          6            A.   No.

          7            Q.   And Georgia was the -- were they the first
state

          8        to do this, to use all DREs?

          9            A.   My understanding, yes.

10          Q.   And were these the TS machines?

11          A.   I'm not sure if I follow your question.

12          Q.   Well, what machines were used?

13               MR. DENKER:   Objection, form, foundation.

14          A.   The DRE units --

15          Q.   (By Mr. Risner)   Yeah.

16          A.   -- are model R6.

17          Q.   Are you familiar with the term TS or TSX?

18          A.   Well, yes, I am.

19          Q.   Okay.   Yeah.   So, is the R6 also known as the
TS?

20          A.   By whom?

21          Q.   Heck, I don't know.   I see it in all these

22     reports, you know.

23          A.   TS in an acronym that stands for touch screen.

24          Q.   Yeah.

25          A.   Many companies produce TS units, touch screen


26


1     units.

2          Q.   Okay.

3          A.   Diebold refers to this model that we use as the

4     R6 unit.   They have another unit, the TSX, and that is
a

5     unique model number.

6       Q.   Okay.   So, TSX is a unique model number of

7    Diebold, right?

8       A.   That's correct.

9       Q.   And a lot of folks call this other unit TS, but

10   among Diebold they actually call it an R6?

11      A.   That's correct.

12      Q.   Is that what --

13      A.   Well --

14           MR. DENKER:   Objection, form, foundation.

15      A.   Well, the unit that we use in Georgia is the

16   Diebold R6 unit.

17      Q.   (By Mr. Risner)   And is that the same unit that

18   Volusia County in Florida uses, do you know?

19      A.   I don't know.

20      Q.   I just -- I may have the wrong county, but I
was

21   thinking, wasn't there some county, in 2006, in
Florida,

22   where there were, you know, 16,000, a whole bunch of

23   votes that weren't recorded at all?

24           MR. DENKER:   Objection, form, foundation.

25      Q.   (By Mr. Risner)   Do you know anything about
that?


27

1          A.  I'm not sure I follow your question.

2          Q.  I'm just trying to remember from news
broadcasts,

3     but I think there was an election for Congress, the

4     United States House of Representatives, in 2006, and

5     some county in Florida, there were, I'm thinking
16,000,

6     I may be wrong, a whole bunch of votes that simply

7     weren't recorded on those machines.  Does that ring a

8     bell with you?

9          A.  If you're referring to the ES&S machines used
in

10    Sarasota, Florida, there's been allegations, although
at

11    this point unsubstantiated allegations, that the ES&S

12    machines used in Sarasota, Florida, recorded
significant

13    under-votes for a congressional seat.  Is that what

14    you're referring to?

15         Q.  Yeah, that sounds right, yeah.

16             So, were those touch screen machines?

17         A.  The ES&S machines?

18         Q.  Yeah.

19         A.  Yes.

20         Q.  And do you know what the problem was with those

21    machines or what happened down there?

22             MR. DENKER:  Objection, form, foundation.

23         A.  No.

24      Q.  (By Mr. Risner)  So, do you know anything about

25      the -- about Pima County's election staff's level of

28

1       competence?

2            MR. DENKER:  Objection, form, foundation.

3       A.  No.

4       Q.  (By Mr. Risner)  And I would say the same thing

5       about Brad Nelson, do you know if he has any knowledge

6       about how these computer systems work?

7            MR. DENKER:  Objection, form and foundation.

8       A.  I am not knowledgeable of Mr. Nelson's

9       competence.

10      Q.  (By Mr. Risner)  And has Pima County discussed

11      with you the security changes that they plan to make
in

12      the future?

13           MR. DENKER:  Objection, form, foundation.

14      A.  I have read, I believe, an outline of those

15      changes, but I have not discussed those changes with

16      anybody in Pima County.

17      Q.  (By Mr. Risner)  So what's your understanding
of

18      the changes that they plan on making?

19      A.  Are you talking about any change specifically,

or

        20      the global set of changes?

        21         Q.  Just give me the global set.  I want to find
out

        22      what you know about it.

        23         A.  I think the goals are laudable.  I think the

        24      implementation may be problematic.

        25         Q.  Yeah.  What's your understanding of what
changes


29


        1       that they're planning on making?

        2          A.  I would have to look at the document.

        3          Q.  Do you know what the summary report is in the

        4       GEMS system?

        5          A.  Yes.

        6          Q.  And what's your understanding of when those

        7       reports should be printed?

        8             MR. DENKER:  Objection, form, foundation.

        9          A.  That's a jurisdiction issue.

        10         Q.  (By Mr. Risner)  Yeah.  What does that mean?

        11         A.  It means, the State of Arizona, Pima County,
any

        12      municipality, whatever is using that technology,
decides

        13      when and by whom those reports are issued.

14      Q.   Do you know what the GEMS manual says about it?

15      A.   No.

16      Q.   What's the situation in Georgia?

17      A.   I would have to consult a county superintendent

18   to know what the practice is in Georgia for the use of

19   the summary report.

20      Q.   You would consult who?

21      A.   The county superintendent, a superintendent of

22   elections.

23      Q.   So, for you to know what it is in Georgia, you

24   need to call one of these 159 guys and ask them?

25      A.   I would want to make sure that I am well-versed


30


1    on how it is used in that particular county.

2       Q.   There's not a state law?

3       A.   No.

4       Q.   Any state rules?

5       A.   No.

6       Q.   No secretary of state regulations on it?

7       A.   Not that I'm aware of.

8       Q.   Are you aware that the Democratic Party in this

9    case has not requested a copy of GEMS?

10           MR. DENKER:   Objection, form, foundation.

11          A.   I am not aware of -- I'm trying to answer that

12          question.  You asked a negative.  I have no knowledge
of

13          the Democratic Party requesting a copy of GEMS.

14          Q.   (By Mr. Risner)  Right.  So then you would
agree

15          that, to your understanding, the Democratic Party has

16          not requested a copy of GEMS?

17          A.   That's correct.

18          Q.   Yeah, and that the Democratic Party has
requested

19          a copy of the database?

20               MR. DENKER:  Objection, form, foundation.

21          A.   That's correct.

22          Q.   (By Mr. Risner)  And earlier, if I understood

23          your answer, you said that, in your opinion, 16-444,

24          that GEMS was a computer program?

25          A.   No --


31


1               MR. DENKER:  Objection to form, foundation.

2          A.   -- the GEMS database.

3          Q.   (By Mr. Risner)  What's the difference between
a

4          database and a computer program?

5               MR. DENKER:  Objection, form, foundation.

6          Q.   (By Mr. Risner)   In general.

7          A.   Are you presuming there is a difference?

8          Q.   I'm just –– you're the expert.  I may ask a
dumb

9     question.  Yeah, I'm presuming there's a difference,
but

10    tell me if there's not.

11         A.   In the Arizona statute, as I understand it, if
I

12    can read it just to refresh my memory, it states ––
may

13    I do so?

14         Q.   Yeah, but my question at the moment relates to

15    just, in general, computer technology usage.

16         A.   A computer program is a set of stored ––

17              MR. DENKER:  Objection, form, foundation.  Go

18    ahead.  Sorry.

19         A.   A computer program is a set of stored

20    instructions that causes a computer system to
accomplish

21    a task.

22         Q.   (By Mr. Risner)  And what's a database?

23         A.   A database is a complex data structure that

24    contains both data and objects, of which those objects

25    can be executable code, as well as metadata.


32

1      Q.  Does the GEMS database contain executable code?

2      A.  It does in the form of SQL queries.

3      Q.  Do you know if the SQL in the database is

4  interpretable code, or is it just in the database as a

5  byproduct of Diebold's choice of Microsoft Access as a

6  database?

7         MR. DENKER:  Objection, form, foundation.

8      A.  I don't know.

9      Q.  (By Mr. Risner)  What's the function of those

SQL

10  queries in the database?

11      A.  Used to support report generation.

12      Q.  Does GEMS generate the SQL codes?

13         MR. DENKER:  Objection, form, foundation.

14      A.  Yes.

15      Q.  (By Mr. Risner)  Is that self-modifying code?

16      A.  The SQL?

17         MR. DENKER:  Objection, form, foundation.

18      Q.  (By Mr. Risner)  Yeah.

19      A.  No.

20      Q.  Between -- the combination between GEMS and the

21  SQL in the database, is that self-modifying code?

22      A.  No.

23         MR. DENKER:  Let me reflect an objection to the

24  last question, as well.  Thank you.

25          MR. RISNER:  What was the objection?


33


1          MR. DENKER:  Form and foundation.

2     Q.  (By Mr. Risner)  You know what self-modifying

3     code is, don't you?

4     A.  I know what a technical definition of

5     self-modifying is.

6     Q.  Did you understand my question?

7     A.  I did.

8     Q.  If -- the SQL in the database, is that

9     interpreted code?

10    A.  It is.

11    Q.  Do you know whether the federal certification

12    process treated that code as data or as code?

13    A.  I do not.

14         MR. DENKER:  Objection, form, foundation.

15    Q.  (By Mr. Risner)  Do you understand the federal

16    certification rules in the federal manual for the ITAs

17    to do certification?

18         MR. DENKER:  Objection, form, foundation.

19    A.  ITAs no longer do certification.

20    Q.  (By Mr. Risner)  Okay.  How about if we change

21    the term to qualification.

22          MR. DENKER:  Same objection.

23      A.  I'm not sure I can answer your question.

24      Q.  (By Mr. Risner)  Are you familiar with the 2002

25  voting system standards?

34

1          MR. DENKER:  Objection, form, foundation.

2      A.  I'm not familiar with a document that you're

3  describing.

4      Q.  (By Mr. Risner)  Are you familiar with some

5  standards called VBSG?

6      A.  Yes.

7      Q.  And the 1990 and 2002 editions?

8      A.  1990 was not called the VBSG.

9      Q.  What was that called?

10      A.  That was the VSG.

11          MR. RISNER:  I think I want to take a break.

12          (Break taken, 10:01 to 10:11 a.m..)

13      Q.  (By Mr. Risner)  Yeah, Mr. King --

14      A.  Yes.

15      Q.  -- is it true that the program code has to be

16  scrutinized by the ITAs --

17          MR. DENKER:  Objection, form, foundation.

18      Q.  (By Mr. Risner)  -- pursuant to the federal

19      rules?

20          A.   What do you mean, "scrutinized"?

21          Q.   You know, these Independent Testing Authorities

22      have to look at certain code, don't they --

23          A.   They do.

24          Q.   -- source code?  Do they do a source code
review?

25          A.   Yeah.


35


1           Q.   Yeah, and after they do the source code review,

2       they come up with a hash number; is that correct?

3               MR. DENKER:  Objection to form, foundation.

4           A.   I'm not aware of that.

5           Q.   (By Mr. Risner)  Well, you do know what a hash

6       code is, don't you?

7           A.   I do.

8           Q.   Yeah.  And are you aware that various computer

9       election programs have, like, a library somewhere
where

10      there's a number of what the hash codes are that are

11      actually publicly available?

12          A.   The NSRL library?

13          Q.   Yeah.

14          A.   Yes.

15          Q.   So, I'm sorry, what was -- I may have asked a
bad

16          question before, but don't the ITAs, after they look
at

17          the source code, develop a hash number or hash code
for

18          it?

19          A.   I'm not aware of that, if they do.

20          Q.   Yeah, how does that number get into that
library?

21               MR. DENKER:  Objection, form, foundation.

22          A.   I'm not sure what the NIS procedures are for

23          submission of the hash code.

24          Q.   (By Mr. Risner)  So you don't know how those
hash

25          codes get there?


36


1          A.   I do -- I do not know.

2          Q.   And what's your understanding of the purpose of

3          what those hash codes are?

4          A.   Hash codes are to be used to validate the

5          validity of the software that's referenced in the

6          library.

7          Q.   And then are there any hash codes for the

8          database?

9               MR. DENKER:  Objection, form, foundation.

10      Q.   (By Mr. Risner)   I mean, there can't be hash

11      codes for database elements, can there?

12           MR. DENKER:   Objection, form, foundation.

13      Q.   (By Mr. Risner)   Or can there?

14      A.   Well, of course there can.

15      Q.   Huh?

16      A.   Of course.

17      Q.   Did the ITAs develop any -- something for the

18      database?

19      A.   Not that I'm aware of.

20      Q.   The SQL elements, you said those are
interpreted

21      code, right?

22      A.   SQL is an interpreted language.

23      Q.   Can it be modified at the county level?

24           MR. DENKER:   Object to form and foundation.

25      A.   I'm not aware of how that could be done.


37


1      Q.   (By Mr. Risner)   Is there anyone anywhere in
the

2      system that's checking to see if it's been changed at

3      the county level?

4           MR. DENKER:   Objection, form, foundation.

5      A.   I'm not aware.

6          Q.   (By Mr. Risner)   And I think you said what the

7     SQL is involved with is report generation.

8          A.   Yes.

9          Q.   All right.  Anything else?

10         A.   Not that I'm aware of.

11         Q.   And that's not a core vote counting function,

12    correct?

13         A.   Report generation would not be a core vote

14    counting function.

15         Q.   So, the SQL just has some role in organizing

the

16    data; is that correct?

17             MR. DENKER:   Objection, form, foundation.

18         A.   I don't know what you mean by "organizing the

19    data".

20         Q.   (By Mr. Risner)   The report generation just

21    reorganizes data and presents it for viewing, isn't

that

22    correct?

23         A.   That's incomplete.

24         Q.   Okay.  Complete it for me.  Explain why it's

25    incomplete.


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1          A.   It presents data for report generation.

2          Q.   Yeah.   Okay.   Viewing or printing?

3          A.   It may be viewed, may be printed, may be
written

4       to a file.

5          Q.   And couldn't that be done by the same SQL that

6       resides inside GEMS?

7              MR. DENKER:   Objection, form, foundation.

8          A.   That's speculation.   I don't know.

9          Q.   (By Mr. Risner)   Okay.   So, I guess, do you

10      actually know whether it's functional or just a
residual

11      or byproduct of GEMS?

12             MR. DENKER:   Objection, form, foundation.

13         A.   It is functional.

14         Q.   (By Mr. Risner)   How do you know that?

15         A.   In reviewing the code, reviewing the SQL

16      statements, the operations that are implied within
those

17      statements are necessary for the production of
reports.

18         Q.   Well, but, okay, let me see if I'm following
you

19      here.   You said the SQL that's in the database is

20      necessary for the production of reports.

21         A.   That's correct.

22         Q.   Yeah, but isn't there similar SQL in GEMS
itself?

23      Do you know?

24        A.   I do not know.

25        Q.   Could it be there?


39


1             MR. DENKER:   Objection, form, foundation.

2        A.   Are you asking me if it's possible?   I would
have

3   to review the source code to make that determination.

4        Q.   (By Mr. Risner)   Okay.   So I guess what I'm --
if

5   you don't know whether it's in GEMS, how do you know

6   that it's using the SQL in the database as opposed to

7   SQL in GEMS?

8        A.   I'm not sure I follow your question.   Can you

9   reask it?

10        Q.   Yeah.   If I understand you, you don't know

11   whether GEMS itself has SQL in it.

12        A.   That's correct.

13        Q.   And you don't know whether, in generating

14   reports, GEMS actually uses the SQL that's inside GEMS

15   to do that, correct?

16        A.   That's not correct.

17        Q.   No, okay.   Why not?

18        A.   GEMS is the overall envelope that is required
to

19          run an election, that in order for that election to be

20          properly processed, it must use the SQL code that's in

21          the database.

22              Q.   Why must it?

23              A.   Because the reports that are produced are an

24          essential part of the election report.

25              Q.   Yeah, but you don't know whether GEMS itself
has

40

1           SQL that would generate those reports, correct?

2               A.   I do not know if the GEMS -- and I'm assuming

3           that you mean the GEMS executable?

4               Q.   Yeah.

5               A.   I do not know that the GEMS executable has an
SQL

6           interpreter.

7               Q.   In Georgia, just to clear up a little
something,

8           it's not terribly important for this case, but didn't
--

9           wasn't Diebold hired to pretty much run the election

10          there in Georgia in 2004?

11                  MR. DENKER:   Objection, form, foundation.

12              A.   Not that I'm aware of.

13              Q.   (By Mr. Risner)   When was that election where
Max

14        Cleland lost?  What year was that?

15            A.   I believe that was the fall of 2002 election.

16            Q.   Okay.  And wasn't Diebold paid, you know, 54

17        million bucks, or some huge number, to help run that

18        election?

19                MR. DENKER:  Objection, form, foundation.

20            A.   Diebold had a contract with the State for

21        delivery of 19,000 DRE units, 400 optical scan units,

22        6,500 encoders.

23            Q.   (By Mr. Risner)  And then they --

24            A.   But I'm not sure I know what you mean by "run"

an

25        election.


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1            Q.   Well, didn't they send a lot of their technical

2        people in to help set up those machines and be
involved

3        directly in the election?

4                MR. DENKER:  Objection, form, foundation.

5            A.   They provided technicians to each county for

6        election day support.

7            Q.   (By Mr. Risner)  Yeah.  You know, a few months

8        ago, I was reading an article in, what is it, Rolling

9        Stone, that Robert Kennedy wrote.  You're smiling.

10      You've read that article, haven't you?

11      A.  No, I'm smiling that you read Rolling Stone.

12      Q.  Well, I have a very broad range of intellectual

13      interests.  Are you familiar with the article?

14      A.  I am not.

15      Q.  There was a -- I forget the guy's name now, but

16      there was a Diebold technician in Georgia that talked

17      about, you know, the Diebold president flying in with

a

18      little patch that he asked them to insert on the

19      machines and not tell any of the election officials

20      about it.  Are you aware of those allegations?

21      A.  I have not heard that one.

22      Q.  Really?

23      A.  Um-hum.

24      Q.  Huh.  And he said that he put them on, like,

25      1,500 machines, and they were installed on like 5,000

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1      machines in heavy Democratic areas.  You've not heard

2      anything about that?

3          MR. DENKER:  Objection, form, foundation.

4      A.  You're telling me new data on -- on an old

story.

5      Q.  (By Mr. Risner)  Yeah.  You've not heard about

          6          Diebold coming in with a patch, putting it on
thousands

          7          of machines, and telling their employees not to let
any

          8          election officials know anything about it?

          9                  MR. DENKER:  Objection, form, foundation.

         10          Q.  (By Mr. Risner)  That's a new story to you?

         11                  MR. DENKER:  Form, foundation.

         12          A.  The version that you're telling me is a new

         13          story.

         14          Q.  (By Mr. Risner)  Yeah, which version have you

         15          heard?

         16          A.  The allegations that a patch was applied to the

         17          system, I'm familiar with that.

         18          Q.  Yeah.  Well, what's your understanding of what

         19          that patch was about?

         20                  MR. DENKER:  Objection, form, foundation.

         21          A.  The -- I would have to review the
documentation.

         22          As I recall, it dealt with an open port on the

         23          configuration of Windows CE.

         24          Q.  (By Mr. Risner)  So, what was the point of the

         25          patch?


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1    A.   During the --

2         MR. DENKER:  Objection, form, foundation.

3    A.   During the acceptance testing of the units, the

4    units would sometimes freeze up during the testing.

5    Q.   (By Mr. Risner)  So, this was a patch that you

6    all were aware about and looked at, correct?

7         MR. DENKER:  Objection, form, foundation.

8    A.   That's correct.

9    Q.   (By Mr. Risner)  And that related to possible

10   problems with screen freezes?

11   A.   Fixing the screen freeze, yes.

12   Q.   Yeah.  This employee of Diebold said that the

13   patch he was told related to a clock problem.  So that

14   would be a patch that you weren't aware of, correct?

15   A.   I'm not aware of a discussion of a patch
dealing

16   with a clock.

17   Q.   Yeah.  So the -- kind of interesting.  You're

18   familiar with Rolling Stone magazine?

19   A.   Um-hum, I read it.

20   Q.   Yeah.  Robert Kennedy, Junior, you know who he

21   is?

22   A.   Um-hum.  Um-hum.

23   Q.   So, he writes an article in Rolling Stone and

24   quotes a Diebold technician who worked in that
election,

25      who personally involved -- installed 1,500 patches and

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like    1      said that his buddies, together, the group, put in

        2      5,000 of these patches and were instructed not to tell

        3      the Georgia election officials about it.  This thing

about   4      appears in a national magazine, and you don't know

        5      it, that article.  Is that what you're telling me?

        6             MR. DENKER:  Objection, form and foundation.

        7         A.   That is correct.

        8         Q.   (By Mr. Risner)  I'll see if I can get you a

        9      copy.  It seems like it would be something right down

        10     your alley.

        11            Let me ask you about some studies of

read,   12     vulnerabilities of these various systems.  You've

of      13     I take it, the Princeton University Security Analysis

        14     the Diebold Accuvote TS System of September 13, 2006?

        15        A.   Yes, I have.

        16        Q.   How about the Johns Hopkins University Analysis

        17     of Voting Systems in February 2004?

        18        A.   I am.

        19        Q.   And the California Secretary of State staff

20      report, Investigations of Diebold Election Systems, in

21      April 2004?

22      A.  I have not read that --

23      Q.  Huh?

24      A.  I have not read that report.

25      Q.  How about the Ohio Secretary of State DLE

45

1      Technical Security Assessment report of November 2003?

2      A.  I'm aware of it, but I have not read the
report.

3      Q.  Are you -- Maryland Legislative Services
Trusted

4      Agent report of January 2004, and Robert Technology

5      Report?

6      A.  I've read that.

7      Q.  The SAIC Risk Assessment report?

8      A.  I have not read that one.

9      Q.  The University of California Security Analysis
of

10      Diebold AccuBasic Interpreter report of 2006?

11      A.  I don't recall reading it.

12      Q.  Have you read the recent reports that the

13      California Secretary of State published, such as
Source

14      Code Review of the Diebold Voting System?

15          A.   I have.

16          Q.   The Ohio evaluation report from the 2006

17     election, have you read that?

18          A.   I can't recall.

19          Q.   Okay.  How about Candice Hoke, GEMS Database

20     Design Issues Related to Voting System Certification

21     Standards, have you read that?

22          A.   I can't recall.

23          Q.   Well, you know Candice Hoke, of course, don't

24     you?

25          A.   I don't know.

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1          Q.   You don't?

2          A.   I do not.

3               MR. DENKER:  Objection.

4          Q.   (By Mr. Risner)  Oh, okay.  I thought she was
at

5     one of these hearings in Ohio when you were there, so
I

6     thought you might know her from that.

7          A.   (No oral response.)

8          Q.   So what's -- do you have an opinion on the sort

9     of security design of the Diebold software of GEMS?

10          A.   Uhm -- yeah, I do have an opinion.

11      Q.   Yeah, what is it?

12      A.   Needs improvement, but is on par with
competitive

13      products.

14      Q.   So, in other words, would you say that they all

15      have pretty lousy security design?

16           MR. DENKER:  Objection, form, foundation.

17      A.   No, I didn't say that.

18      Q.   (By Mr. Risner)  No.  I'm asking if you would
say

19      that.

20      A.   No.  I would say they -- they could all bear

21      improvement.

22      Q.   Would you say that GEMS architecture conforms
to

23      fundamental database design principles and software

24      industry standards for ensuring accurate data?

25      A.   I have -- I would not say that, but I would not


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1      deny it either.

2      Q.   Well, let's --

3           MR. DENKER:  Let me have the record reflect
that

4      Mr. Risner is reading from a document.

5           MR. RISNER:  The record can reflect that I used
a

6          document to formulate my question, and, in fact, the

7          document is called GEMS Tabulation Database Design

8          Issues in Relation to Voting Systems Certification

9          Standards.

10         Q.   (By Mr. Risner)  GEMS database can be edited with

11         MS Access; isn't that correct?

12         A.   That's correct.

13         Q.   And would you agree that GEMS dependence on

14         Microsoft's JET technology introduces additional risk to

15         data accuracy and security?

16              MR. DENKER:  Objection, form, foundation.

17         A.   In and of itself, no.

18         Q.   (By Mr. Risner)  Well, would you agree that, you

19         know, in a computer environment, most security problems

20         are caused by IT personnel?

21              MR. DENKER:  Bill, I'm sorry, would you repeat

22         the question?  I didn't hear it.

23              MR. RISNER:  Well, maybe we can just read it

24         back.

25              (Pending question read by court reporter.)


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1          MR. DENKER:  Objection to form, foundation.

2     A.  I'd have to -- I would not offer an opinion on

3     that.  If you're asking do IT personnel pose a risk --

4     Q.  (By Mr. Risner)  Yeah.

5     A.  -- then I would say yes.

6     Q.  And why -- I'm trying to figure out what it was

7     you didn't like about my first question.

8     A.  It's a very broad question.  For example, if

9     you're talking about pay panel, the hackers represent

10    high -- more risk than the small number of IT personnel

11    that support that system.

12    Q.  Okay.  Well, let's just then look at voting

13    computer systems.  Wouldn't the greatest risk be from

14    insiders?

15         MR. DENKER:  Objection, form, foundation.

16    A.  Risk to what?

17    Q.  (By Mr. Risner)  Risk for rigging elections,

18    changing votes.

19    A.  I -- I would agree that there is a risk posed by

20    insiders.  There's a risk posed by hackers.  But I would

21    not propose to stratify or quantify what that risk is.

22    Q.  Well, why not?

23    A.  Because there's many risks to the integrity of an

24      election.

25              One of the concerns that many of us have is that

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1       security is a red herring that is causing the neglect of

2       some of the larger issues to the integrity of elections.

3           Q.  Like what?  What's the larger issue?

4           A.  Ensuring that voters are assigned to the proper

5       precincts.

6           Q.  How would -- how could an outsider hack into Pima

7       County's computer system?

8           A.  I've not done an analysis on Pima County's

9       system --

10          Q.  Okay.

11          A.  -- to answer that question.

12          Q.  In Georgia, are your Diebold systems cut off from

13      the Internet access?

14          A.  They are connected to no external network, which

15      would include the Internet.

16          Q.  So, you toured the Pima County facilities --

17          A.  Yes.

18        Q.   -- but you didn't learn enough to have any view

19        on how someone could hack into the system?

20        A.   That's correct.

21        Q.   Okay.  So, let's assume that that computer is not

22        connected to any other computers, it's not in a network,

23        and it's not on the Internet, and that there are no

24        Wi-Fis and no entry by modem.

25        A.   Um-hum.


50


1        Q.   How could someone on the outside hack into that

2        computer?

3        A.   I don't know.

4        Q.   Now let's assume that you've got one or two or a

5        couple of people that are on the inside that are working

6        on that computer and have access to it, then they can

7        make changes, can they not?

8        A.   I've not reviewed the security procedures of Pima

9        County to know whether those changes could be made or,

10       if made, whether or not they would be detectable.

11       Q.   Well, that's fine.  Let's assume that you've not

12        looked at Pima County's particular security, but let's

13        just invent County X, a mythical county --

14            A.   Um-hum.

15            Q.   -- that has a set-up where the computer's not

16        connected to another computer, not networked, no
modems,

17        no Wi-Fi.  Then what would that County X do to see if

18        their inside computer operator had made changes?

19                MR. DENKER:  Object to form, foundation.

20            A.   I would have to know the existing controls in

21        that hypothetical environment that you described in

22        order to know whether that's possible or, if possible,

23        how probable.

24                It's very difficult -- I mean, if you're
saying,

25        hypothetically, can anything happen, I think, by


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1         definition, hypothetically, anything can happen.

2             Q.   (By Mr. Risner)  Well, what I'm trying to get
at

3         is what kind of controls would be needed to catch
these

4         insiders.

5                 MR. DENKER:  Object to form and foundation.

6             A.   Well, I think the standard protocol include

7       supervision, logs, independent review.

8           Q.   (By Mr. Risner)  Who conducts the independent

9       review?

10              MR. DENKER:  Objection, form, foundation.

11          A.   Are you asking who can?

12          Q.   (By Mr. Risner)  Yeah.

13          A.   Whoever the jurisdiction names as most

14      appropriate.

15          Q.   And logs, what do you mean by "logs"?

16          A.   Logs, access logs to the facility, access logs
to

17      the server, access logs to the software.

18          Q.   And by "supervision," what do you mean?

19          A.   Good business practices, that employees are

20      properly trained and properly supervised.

21          Q.   What do you -- if, you know, everyone is using

22      the same user name, then that would defeat the log

23      functions, wouldn't it?

24          A.   It would certainly compromise log functions.

25          Q.   What if the inside person running the computer


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1       took home with him a backup copy of the database at

2       night, would you see any security problems with that?

3          MR. DENKER:  Object to form and foundation.

4     A.   I would have to first look at what the

5     jurisdiction rules are on the custody of that data.

6     Q.   (By Mr. Risner)  I didn't ask you whether it

7     broke any rules.  I'm asking you if you see any
security

8     problems with a guy taking home with him a copy of the

9     database.

10     A.   On the surface, it would raise questions,

11     clearly.

12     Q.   Yeah.  Why's that?

13     A.   It would raise the question of what are the
rules

14     of custody in that jurisdiction.

15     Q.   Would it raise any question of what he did with

16     it at home?

17     A.   It could.

18     Q.   And if he had Access at home on his computer,
he

19     could just insert a CD and make any changes he wanted,

20     couldn't he?

21          MR. DENKER:  Object, form, foundation.

22     A.   That's an assertion.  I don't know that that's

23     true or not.

24     Q.   (By Mr. Risner)  Well, what changes can you
make

25     with MS Access on your home computer to a database?

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1        A.   And have it still function within GEMS?

2        Q.   Yeah.

3        A.   I don't know.

4        Q.   Well, do any of those reports that you're

5   familiar with, do they talk about what can be done or

6   not done?

7             MR. DENKER:   Objection, form, foundation.

8        A.   The reports talk extensively about theoretical

9   scenarios.

10       Q.   (By Mr. Risner)   Uh-huh.   Have you ever studied
a

11   GEMS database in MS Access, yourself?

12       A.   I have.

13       Q.   Were you able to see if you could manipulate,

14   change things and do stuff to the database?

15       A.   I did not attempt to manipulate any of the
data.

16       Q.   Yeah.   Do you understand that you could -- if
you

17   did do that, you could just go in and erase on the log

18   what your activities had been?

19             MR. DENKER:   Objection, form, foundation.

20       A.   On which log?

21       Q.   (By Mr. Risner)   On the GEMS audit log.

22          A.   And it be undetectable?

23          Q.   Right.

24          A.   I'm not aware of that.

25          Q.   Are you aware that the GEMS audit log is part of

54

1      the database itself?

2          A.   Yes.

3          Q.   Okay.  So if you deleted what your activity was,

4      then how would you be able to detect what had occurred?

5          A.   File size would have changed, the file date size

6      would have changed, the file time stamp would have

7      changed.

8          Q.   So, those are the kinds of things that one would

9      need to examine to determine if there had been

10     manipulation of the database utilizing MS Access,

11     correct?

12         A.   That would be among the evidence you would look

13     at.

14         Q.   I think you said you saw the source code review

15     of the Diebold voting system?

16          A.   Which report?

17          Q.   The California one.   (Hands document to
witness.)

18          A.   I'm aware of it, but I am not familiar with its

19     contents.   This was one done at Berkeley, I believe.

20          Q.   Right, University of California Berkeley, under

21     contract with the California Secretary of State.   It's

22     the Diebold Source Code Review.

23               And they -- one of their -- in the executive

24     summary, it says:   The Diebold system lacks adequate

25     controls to ensure that county workers with access to


55


1      the GEMS central election management system do not

2      exceed their authority.

3               Do you agree with that or have any opinion on

4      that?

5          A.   Do I agree with an assertion --

6          Q.   Yeah.

7          A.   -- that an employee should not exceed their

8      authority in the execution of their duties?

9          Q.   No.

10         A.   Restate.

11         Q.   It's not a question of whether they should.

12         A.   I'm sorry.   Restate the question.

13        Q.   What they're saying is that the Diebold system

14        lacks adequate controls to ensure that county workers

15        with access to the GEMS central election management

16        system do not exceed their authority.

17             They further state:  Anyone with access to a

18        county GEMS server could tamper with ballot
definitions

19        or election results and could also introduce malicious

20        software into the GEMS server itself or into the

21        county's voting machines.

22             So, is this news to you, or do you -- or does

23        that conform with your understanding of GEMS?

24             MR. DENKER:  Object to the form and foundation.

25        A.   The assertion that the software itself lacks


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1        controls over employee access, is that --

2        Q.   (By Mr. Risner)  Here, let me just -- you can

3        just read it there.

4        A.   Read the highlighted portion?

5        Q.   Yeah, just read -- really read that.  That's
what

6        I was asking you about.  Want to read it out loud?

7        A.   Certainly.

8             Vulnerability to malicious insiders.  The

Diebold

    9      system lacks adequate controls to ensure that county

    10     workers with access to the GEMS central election

    11     management system do not exceed their authority.

    12       Q.  You can read the rest of that next sentence,
too.

    13       A.  Anyone with access to a county's GEMS server

    14     could tamper with ballot definitions or election
results

    15     and could also introduce malicious software into the

    16     GEMS server itself or into the county's voting
machines.

    17        Do I agree with that?

    18       Q.  Yeah.

    19       A.  It's an incomplete sentence, so I will say I do

    20     not agree with it, because what is implied there is

    21     undetected.

    22       Q.  How can it be detected?

    23       A.  Well, that's what the jurisdiction's rules and

    24     procedures are for.  So, to assert that GEMS allows

    25     employees to exceed their authority without knowing
what


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    1      authority has the jurisdiction given those employees,
I

    2      don't know how you can assert that a software

3        environment allows that access.  What is the authority

4        of those employees?

5             Q.   What do you mean by "authority"?

6             A.   Well, that's exactly my question.  What --
you're

7        citing that report.  It says that the employees can

8        exceed their authority.  What is that authority?

9             Q.   Well, can we assume that they don't have the

10       authority to introduce malicious software?

11            A.   Yeah, you can assume anything you like, I
guess,

12       as long as we're making assumptions, but that specific

13       statement says that it lacks the controls that would

14       prevent employees from exceeding their authority.  My

15       question is:  What is their authority?

16            Q.   Yeah, but wouldn't you agree that nowhere in
the

17       United States would a county worker have authority to

18       introduce malicious software into GEMS?

19            A.   I would agree with that.

20            Q.   Yeah.  And would you agree that they don't have

21       the authority to tamper with ballot definitions or

22       election results?

23                 MR. DENKER:  Object to form and foundation.

24            A.   I would not agree with that.

25            Q.   (By Mr. Risner)  Yeah.  Well, let's break that

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1     out.  Do any county workers have authority to tamper

2     with election results?

3        A.  What do you mean by "tamper"?

4        Q.  Well, I think, "tamper," the way that I

5     understand that word, would be to change in an

6     inaccurate way.

7        A.  Then I would agree with it.

8        Q.  Yeah.  Is "tamper" a part of your vocabulary?

9     How do you use the word?

10       A.  If you're saying that "tamper" always has a

11    detrimental definition, then it does.  You can tamper
--

12    for example, if you're talking about in reconciling

13    accounts --

14       Q.  Yeah.

15       A.  -- then GEMS has to be able to account for
every

16    valid ballot, regardless of how it is cast.  So, when
we

17    have a, for example, a failure on a piece of equipment

18    in a jurisdiction, say one optical scanner in the

19    jurisdiction, if those ballots for some reason had to
be

20    hand counted, you still have to enter those totals
into
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21     the vote totals.  Is that tampering with the election

22     results?

23         Q.  You consider that to be tampering?

24         A.  I don't.

25         Q.  Me either.

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1          A.  Okay.  Then we agree.

2          Q.  Well, that would be like rectifying or some
other

3      word.

4          A.  And that's why I asked for the clarification,

5      what do you mean by tampering.  The ability to enter
in

6      election totals in the GEMS is a required part of that

7      system.

8          Q.  Yeah.  Well, can you think of any examples
where

9      tampering isn't doing something that's improper?

10         A.  I can't.

11         Q.  Well, how about tampering with valid ballot

12     definitions, would that be appropriate for any county

13     worker anywhere?

14         A.  Election databases are modified with each

15     election.

16      Q.  Yeah.

17      A.  So the ballot definitions off of a database will

18      be changed with each election.

19      Q.  Right.  And once it's changed and set, later on

20      that wouldn't be tampering, when they create the ballot

21      definition, is it?

22      A.  I would not consider it to be tampering.

23      Q.  Yeah, tampering would be after that's done,

24      right?

25      A.  Well, I don't -- I don't know what the legal


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1      definition of tampering is, but I thought that it said

2      change ballot definitions.

3      Q.  No.  It says, could tamper with ballot

4      definitions.

5      A.  Okay.  Yeah.

6      Q.  Yeah.  So, nobody would have authority to do

7      that, right?

8      A.  I would think not.

9      Q.  Yeah, okay.  So on each of these points, we agree

10      that no one anywhere could have authority to do it.

11          So, what they're saying is that the Diebold

12      system lacks adequate controls to ensure that the
county

13      workers with access to the GEMS central election

14      management system do not exceed their authority.

15          So, do you agree with that, or do you think
that

16      the GEMS system does have adequate controls to ensure

17      that these county workers don't do that?

18      A.  Well, I'm not sure it's the responsibility, the

19      exclusive responsibility of GEMS to provide all the

20      controls for that environment.

21      Q.  Okay.

22      A.  For example, GEMS does not provide the server

23      log-in controls.  That's an operating system function.

24      So you could criticize and say that GEMS does not
ensure

25      server log-in for its employees.  It is not its


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1       responsibility.

2       Q.  All right.  So they say here that many of the
--

3       this is, again, University of California Source Code

4       Review.

5       A.  Um-hum.

6       Q.  And let me just ask you, are you aware of any

          7          other source code review by academics of the Diebold

          8          voting system?

          9                   MR. DENKER:  Object to form and foundation.

         10          A.   I can't think of any off the top of my head.

         11          Q.   (By Mr. Risner)  All right.

         12                   MR. DENKER:  Are you going to admit that into

         13          evidence, that report, as an exhibit?

         14                   MR. RISNER:  No, no, it's -- it's way too thick

         15          to do that, but you can go on the Internet and get a

         16          copy.  Just go to the California Secretary of State's

         17          web site.  In fact, you could probably pull one up
right

         18          now, if you wanted to.

         19                   MR. MARCH:  If they'd let me set up my Wi-Fi.

         20          Q.   (By Mr. Risner)  It says here, many of the

         21          vulnerabilities of the Diebold system result from deep

         22          architectural flaws.

         23                   Do you think this Diebold system has deep

         24          architectural flaws?

         25                   MR. DENKER:  Object to the form and foundation.


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          1          A.   Yeah, I would not offer an expert opinion on
the

          2          depth of those flaws.

3            Do I think it could be improved?  Absolutely,

4        yes.

5        Q.  (By Mr. Risner)  Then they have kind of a
little

6        conclusion here.  It says, again, I quote, this is
from

7        the executive summary, that:  Due to these
shortcomings,

8        the security of the elections conducted with the
Diebold

9        system depends almost entirely on the effectiveness of

10        election procedures.

11            Do you agree with that?

12        A.  I disagree.

13        Q.  Yeah, okay.  And in what way?

14        A.  The phrase "almost entirely" is a sweeping

15        statement.

16        Q.  Right.

17        A.  I'm not sure I believe in anything almost

18        entirely.

19            Do I think that jurisdictions rely upon their

20        manual procedures to ensure integrity in their

21        elections?  The answer's, absolutely, yes.

22        Q.  You know, the sentence, security of elections

23        conducted with the Diebold system, they say "almost

24        entirely," you know, we could have said depends

25        entirely, and you wouldn't agree with that.

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        1       A.  Um—hum.

        2       Q.  So "almost entirely" is a little bit less.

        3       A.  Um—hum.

        4       Q.  How far down would you —— what word would you

        5   choose?

        6       A.  Give me some more choices.

        7           MR. DENKER:  Objection, form, foundation.

        8       A.  "Somewhat".

        9       Q.  (By Mr. Risner)  "Mostly"?

       10       A.  "Somewhat".

       11       Q.  And their conclusion was that the safest way to

       12   repair the system is to re—engineer it so that it's

       13   secure by design.

       14           So, if I understood your questions earlier,

       15   you're not aware of any way that, let's say, the

       16   Democratic Party or a hacker could access Pima
County's

       17   computer to insert any malicious code or hack into it?

       18           MR. DENKER:  Object to form, foundation.

       19       A.  I'm not aware.

       20       Q.  (By Mr. Risner)  But you agree that insiders

       21   could do that, because they have access to the
machine?

22          MR. DENKER:  Objection, form, foundation.

23      A.   Undetected, I do not think that to be possible.

24      Q.   (By Mr. Risner)  Okay.  So how would they be

25   detected?  That's --


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1       A.   I would have to look at the jurisdiction's

2    controls that are in place for review of work product.

3    I would have to look at the intermediate controls on

4    product and process, where they're checked, before I

5    could answer how it could be detected.

6       Q.   And who would do the detecting?

7       A.   It would depend on the jurisdiction.  Again, in

8    Pima County, the parties involved in L&A, for example,

9    they may be a part of the detection process.  The

10   superintendent of elections, the registrar, could be a

11   number of people involved.

12      Q.   So, is it your view, then, that the election

13   integrity and the verification has to remain in the

14   hands of the county election administrators?

15      A.   That is purely a jurisdictional issue.

16      Q.   Yeah.  Well, let's assume that a political
party

17   wanted to verify and do the kind of examination

18          necessary to see if there had been some malicious

19          activity that had occurred.  Do you see any harm in

20          that?

21               MR. DENKER:  Objection, form, foundation.

22          A.  Without knowing the details -- are they

23          qualified, what are they looking at, what's the time

24          lapse -- that would be difficult to give a blanket

25          approval or disapproval.  But I would say that's up to


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1          the jurisdiction.

2          Q.  (By Mr. Risner)  In Georgia, your absentee
ballot

3          counts, how do they appear in your reports?

4               MR. DENKER:  Objection, form, foundation.

5          A.  Absentee ballots are considered a precinct, so

6          they're reported like every other precinct in the

7          jurisdiction.

8          Q.  (By Mr. Risner)  I'm not sure what you mean by

9          "considered a precinct."

10          A.  Well, that's a reporting unit within GEMS,
report

11          votes by precinct, and although absentee ballots can
be

12          issued for every precinct within that jurisdiction,
they

13      are themselves considered a precinct.  It's a
mechanism

14      for reporting.

15          Q.  Okay.  So, let's say your Georgia county has
100

16      precincts.  And you do number the precincts, I take
it.

17          A.  The precincts have a code that designates the

18      precinct, yes.

19          Q.  And people can, whatever, each of those hundred

20      precincts, some people will submit an absentee ballot,

21      correct?

22          A.  They may, yes.

23          Q.  Okay.  And are those absentee ballot votes

24      reported by their original precinct?

25          A.  The votes are not -- the votes are mapped to
the


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1       races, but not to the precinct, not to the base
precinct

2       of the vote.

3           Q.  So, in that -- all hundred precincts in that

4       county, then you report the vote totals by race as if

5       the absentee ballots were all from one precinct?

6           A.  That's correct.

7           Q.  And those absentee ballots are paper ballots

that

        8       are counted on the AccuBasic optical scan readers?

        9              MR. DENKER:  Objection, form, foundation.

        10      Q.   (By Mr. Risner)  Accuvote.

        11      A.   That's correct.

        12      Q.   And what do you all do in Georgia to audit or

        13      confirm the accuracy of that count?

        14      A.   The count of the number of ballots or the votes

        15      in the races on the ballots?

        16      Q.   Votes and races.

        17      A.   Well, all equipment is checked during L&A.

        18      Q.   So, what percentage of your votes in Georgia,

        19      more or less, are absentee?

        20      A.   I couldn't say.

        21      Q.   Yeah.  What are the requirements to submit an

        22      absentee ballot?

        23      A.   The voter has to apply for an absentee ballot

        24      from the election superintendent of their county.

        25      Q.   That's what I'm kind of getting at.  You know,
in


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        1       Arizona, we used to say you wanted one because maybe
you

        2       were going to be out of town or busy or had some
excuse,

          3       and now we have this system, we call them early
ballots,

          4       where anybody can ask for one.  Do you all have kind
of

          5       an excuse system, or can anybody just ask for one?

          6            A.   Those are two different criteria.  We have a

          7       period of early voting that precedes the election, and

          8       during early voting, any voter can go in and vote in

          9       person at the designated location in the county.

          10           Q.   That's where they go in and touch the screen?

          11           A.   That's correct.

          12           Q.   Yeah.  So in the -- these absentee ballots are

          13      mailed in or delivered?

          14           A.   Mailed.

          15           Q.   Okay.  So, let's say, in our hypothetical,
since

          16      you have no idea what percentage of votes these are in

          17      the state, let's say, in this hypothetical county,

          18      there's 1,000 absentee ballots that come in, and the

          19      votes are assigned to different races.  How do you
check

          20      to see that they were counted right?

          21           A.   During L&A, all equipment is tested against
live

          22      ballots for that race.

          23           Q.   Right.  Yeah.

          24           A.   When the ballots are received into the county
and

25      verified, the external envelope is verified as being a

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1       registered voter in that jurisdiction.  The ballots are

2       opened at the -- at the opening of the polls and

3       scanned, and they check for completeness of runs.  So,

4       if there's a thousand ballots, they check to make sure

5       that there are a thousand ballots processed, looking for

6       ballots that may not process because they're torn or for

7       whatever reason they won't scan.  So, there is a total

8       on the number of ballots processed as to completeness.

9            And that's kind of a broad overview of how the

10      ballots are counted.

11      Q.   But there's no audit to go back and see if the

12      machine really did it right?

13      A.   Georgia does not require a hand audit of ballots.

14           MR. DENKER:  Can we take a break for a minute,

15      please?

16           MR. RISNER:  Yeah.

17           (Break taken, 11:16 to 11:26 a.m..)

18      Q.   (By Mr. Risner)  Are you familiar with the term

19      "security by obscurity"?

20        A.   I am.

21        Q.   And what's -- what's that mean in the computer

22   world?

23        A.   Well, I think the intent of that is that, by

24   revealing more about a system, you get more eyes looking

25   at the system, and, ultimately, over a period of time,


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1   you improve the security of the system.

2        Q.   Yeah.

3             MR. MARCH:  If you do security by transparency.

4             MS. FRIAR:  Let the record reflect that Mr. March

5   made a comment.

6        Q.   (By Mr. Risner)  Well, I thought security by

7   obscurity meant that you tried to keep people from

8   knowing what was going on.

9        A.   That's correct.

10       Q.   And that was the security by obscurity approach.

11       A.   I'm sorry.  I thought you meant what was the

12   argument against security by obscurity.

13       Q.   Ah, okay.  So, in this election environment, you

14   think that's a good thing, having security by

obscurity?

15          A.   Exclusively?

16          Q.   Well, just what -- what's your view on how that

17       argument or philosophy fits into the election?

18          A.   I think it's a wonderful academic argument,

19       laudable goals, but difficult to implement.  For

20       example, should passwords not be obscured?  Should

21       sensitive data not be obscured?  Every organization

22       obscures data that they consider to be of security
risk.

23       Your Social Security number, I assume, is obscure, as
is

24       mine.

25          Q.   Well, it's not as obscure as I'd like.


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1          A.   Exactly.

2          Q.   Are you familiar with Greg Hoff's law (ph), the

3       late 18th Century --

4               MR. DENKER:  Objection, form, foundation.

5          A.   I am not.

6          Q.   (By Mr. Risner)  Yeah, me either.  Have you
seen

7       the inside of these R6s?

8          A.   Yes.

9               MR. MARCH:  R6 motherboard.

10      Q.   (By Mr. Risner)   What's the particular --

11      particularly this section, what's the --

12      A.   What is this?  May I ask?

13           MR. DENKER:  Can we identify the object?

14           MR. RISNER:  I believe that's an inside of the

15      RS6 --

16           MR. MARCH:  Motherboard of the R6.

17           MR. DENKER:  Let the record reflect that Mr.

18      Risner has handed the witness a circuit board,

19      approximately nine-by-twelve inches.

20           MR. RISNER:  Yeah.

21      Q.   (By Mr. Risner)   Well, take a look at this

22      section here.  Tell me if you know what that is.

23           MR. DENKER:  Mr. Risner is pointing to a
portion

24      of the circuit board.

25      A.   Jump switch settings.


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1       Q.   (By Mr. Risner)   And what are the different

2       choices there?

3            MR. DENKER:  Object to form and foundation.

4       A.   Are you asking me to read --

5       Q.   (By Mr. Risner)   Yeah.

6          A.   —— what's on this?

7          Q.   Yeah.

8          A.   There's a table that reads:  Boot area

9     configuration, JP2, JP3, JP8, SW2, SW4, boot, side/
side,

10    XXX, one/one, illegal, on/off/on, one/two, E-Pron,

11    off/on/off, two/one, external flash, EST flash,

12    off/on/off, two/two, flash.

13         Q.   So, can that machine be set to —— to boot

14    differently ——

15              MR. DENKER:  Object to form and foundation.

16         Q.   (By Mr. Risner)  —— from different areas of

17    memory?

18         A.   This —— I cannot attest that this is a

19    motherboard from an R6 device.  So, are you asking me

20    if, in theory, whatever this is, can have an alternate

21    boot?

22         Q.   Yeah.

23         A.   I can't tell you that from looking at that
table.

24         Q.   Okay.  Do you know whether the R6 can be booted

25    from different parts of the memory?  Are there
alternate


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1     boots in the R6?

2       A.  I do not know.

3       Q.  Would it be a security problem if the R6 could
be

4    changed to boot from different areas in memory?

5           MR. DENKER:  Object to form, foundation.

6       A.  I -- I can't answer that without some context.

7    If -- are you saying, if there's more than one method
of

8    starting the system, does that make it inherently less

9    secure?

10      Q.  (By Mr. Risner)  Yeah, if it -- if I'm getting

11   this right, it can -- there would be, let's say, a

12   normal boot-up sequence, correct?

13      A.  Well, there is a standard boot sequence for the

14   R6.

15      Q.  Yeah.  If that could be changed, would there be
a

16   security implication in there?

17          MR. DENKER:  Object to the form, foundation.

18      A.  The security implication that would make it

19   perhaps more secure or perhaps less secure?

20      Q.  (By Mr. Risner)  No.  What if it's loading

21   different code when you changed which part of the
memory

22   it boots from?

23          MR. DENKER:  Same objection.

24      A.  I can't answer that.

25          Q.  (By Mr. Risner)  Okay.  Well, you didn't know

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1      that the machines -- or you don't know whether or not

2      R6s can be set to boot differently; is that right?

3              MR. DENKER:  Object to the form and foundation.

4          A.  I'm trying to recall some of the articles that

5      have been written, but I cannot recall whether they've

6      been able to successfully boot an R6 in election mode.

7          Q.  (By Mr. Risner)  Do you still work with Britt

8      Williams, or is he retired?

9          A.  I still see Britt from time to time, and he's

10     still a part-time employee.

11         Q.  Of the election center?

12         A.  Of Kennesaw State University.

13         Q.  Kennesaw, yeah.

14             In "security by transparency" models, do those

15     involve freely handing out passwords or encryption

16     processes?

17             MR. DENKER:  Objection, form, foundation.

18         A.  I don't know.

19             MR. RISNER:  I think that's all the questions I

20     have.

21             MR. MARCH:  He has one more, one more thing.

22          MR. RISNER:  Oh.

23      Q.  (By Mr. Risner)  Do you believe the election

24      integrity has to be left in the hands of county
election

25      administrators, in other words, that we need to trust


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1      those officials?

2          MR. DENKER:  Objection, form, foundation.

3      A.  I believe each jurisdiction has its own laws,

4      rules and regs that specify who is responsible for

5      election integrity and that I'm required, as a
citizen,

6      to uphold the law.

7      Q.  (By Mr. Risner)  Do you think it would be a
good

8      idea to just leave a system where you trusted these

9      guys?

10          MR. DENKER:  Objection to form, foundation.

11      A.  Which guys?

12      Q.  (By Mr. Risner)  County election officials.

13      A.  Trust blindly or --

14      Q.  Yeah.

15      A.  Well, of course not.

16      Q.  I mean, there's kind of like a history in this

17      country of people trying to influence elections by

18      changing votes or rigging them one way or another,
isn't

19      there?

20        A.   There have certainly been instances,

21      interestingly enough, all relegated to paper ballots,

22      but, yes.

23        Q.   Are you aware of any instance in the United

24      States where outsiders tried to hack into a computer

25      election system?

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1            MR. DENKER:  Objection to form, foundation.

2        A.   Successfully, or merely made the attempt?

3        Q.   (By Mr. Risner)  Either way.  I'll take it
either

4      way.

5        A.   Do you consider manipulating the GEMS version
on

6      that laptop attempting to alter elections?

7            MR. MARCH:  No, because we've never tried to
get

8      it back into --

9            MR. DENKER:  Was Mr. March's outburst in the

10      record?

11           COURT REPORTER:  Yes.

        12          A.   Then my answer's, no, I'm not aware of a case

        13      where outsider's have attempted to hack into the
system.

        14          Q.   (By Mr. Risner)  Just to -- I didn't quite

        15      understand you, but was your implication:  Because

        16      someone has GEMS, that that is related to an attempt
to

        17      hack into the system?

        18          A.   A licensed copy of GEMS or an illegal version
of

        19      GEMS?

        20          Q.   Well, just either way, either way.

        21          A.   I -- I would not make that assumption.

        22          Q.   Yeah.  Now, what's the importance of a license
to

        23      have a copy of GEMS?

        24          MR. DENKER:  Object to form, foundation.

        25          A.   Are you asking what's the importance of
copyright


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        1      and intellectual property licensing?

        2          Q.   (By Mr. Risner)  Yeah, what's the importance of

        3      having a licensed copy of GEMS?

        4          MR. DENKER:  Objection, form, foundation.

        5          A.   I think most people who subscribe to the ACM
Code

6      of Ethics, Association for Computer Machinery Code of

7      Ethics, acknowledge that using unlicensed copies of

8      software is unethical.

9          Q.  (By Mr. Risner)  Does GEMS license their

10     database?

11         A.  Not that I'm aware of, but it is certainly

12     copyright protected.  The structure of the databases

are

13     copyrightable.

14         Q.  But the database itself is not something one

15     licenses, correct?

16         A.  I would assume not.

17         Q.  Can Fair Use Law apply?

18             MR. DENKER:  Objection, form, foundation.

19         A.  Well, is there a -- I'm not sure what you're

20     asking.

21         Q.  (By Mr. Risner)  Is there something called Fair

22     Use?

23         A.  Are there Fair Use exceptions?

24         Q.  Yes.

25         A.  There are Fair Use exceptions to copyrights.


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1          Q.  But in terms of your understanding, GEMS itself

2      is licensed, but the database is not, correct?

3          MR. DENKER:  Objection, form, foundation.

4      A.   I -- I do know that GEMS is a licensed software

5  product, and I'm unaware of any licensing requirement

on

6  any work products, any databases produced by GEMS.

7          MR. RISNER:  Yeah.  Okay.  That's all I have.

8          MR. DENKER:  All right.  Let's take a break for

9  just a moment.  Thank you.

10          (Break taken, 11:43 to 11:57 a.m..)

11                   EXAMINATION

12  BY MR. DENKER:

13      Q.   I just have a few follow-up questions here.

14          And I just want to make sure that we have this

on

15  the record and that I'm properly stating this.  Merle,

16  did you say that one of your concerns in handing over

17  the elections database to outside private entities is

18  that they can determine certain elements of the

19  structure of the database?

20      A.   That's correct.

21      Q.   And when we talk about "database," database in

22  quotes, are we talking about the MDB files?

23      A.   Yes, we are talking about the MDB files.

24      Q.   And what is a GB file?

25      A.   GBF file is a post process MDB file by GEMS

which

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1        is compressed into a write-only format.  So, essentially

2        the GBF file is a GEMS stored version of the MDB file.

3            Q.   In your opinion -- I'm sorry.  Did I interrupt

4        you?

5            A.   No.

6            Q.   Okay.  Scratch that.  Let me ask you a different

7        question.

8                Can GEMS generate a ballot without the SQLs that

9        reside in the MDB file?

10           A.   GEMS requires the entire content of the MDB file,

11       including the SQL queries, to produce the ballot.

12           Q.   Can GEMS generate a report without the SQL

13       queries in the MDB file?

14           A.   I'm not aware that they can.

15           Q.   Can GEMS process an election without the SQL

16       queries in the MDB file?

17           A.   It cannot.

18           Q.   And I just want to clarify something from

19       earlier.  When we were talking about hash codes, Mr.

20       Risner was asking a series of questions regarding hash

21     codes, can you get a hash total from the database?

22          A.   You can.

23          Q.   And is that hash total going to change as you
use

24     the database?

25          A.   Any modification made to the file will result
in


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1     a different hash code produced by hashing the file.

2          Q.   Do the answers that you gave to the last two

3     questions have anything to do with whether the MDB
file

4     is a computer program under the definition of

5     ARS 16-444?

6          A.   I'm going to have to remember the last
question.

7          Q.   Well, the first question was:  Can you get a
hash

8     total of the -- of an MDB --

9          A.   Yes.

10          Q.   And the second question is:  Is it going to

11     change --

12          A.   The production of a hash total off of any file,

13     including an MDB file, is independent of the question
of

14     whether it's a computer program or not.

15      Q.  Okay.  That's exactly the question I was
asking.

16          One of the areas in which you've been asked to

17      render an opinion is the area of security of the Pima

18      County election system, in particular security in the

19      context of releasing the MDB file to the public.

20          Would it, in your opinion, constitute a breach
of

21      security if we were to make it possible for a private

22      party to generate a false set of election returns that

23      are forensically indistinguishable from the official
set

24      of election returns, would that be a security risk?

25      A.  That would be an enormous security risk.


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1       Q.  Do you have an opinion about, in general, the

2       trustworthiness of electronic voting, that is to say
--

3       let me define that a little better -- the use of DRE

4       systems in comparison with other election systems, for

5       example, paper ballots, punch card ballots, black and

6       white marbles?

7       A.  DRE systems are more reliable in terms of

8       processing of information than any paper-based or

9       mechanical-based system.

10          Q.   In your opinion, can any software, user
software,

11      be expected to provide all of the security for the

12      environment in which it's used?

13          A.   No.

14          Q.   Can it be expected to provide all the security

15      for the users or the results obtained from using the

16      software?

17          A.   No.

18          Q.   Are you familiar with the Brennan Center study?

19          A.   I've read more than one Brennan Center report.

20          Q.   Okay.  I haven't, so I'm not sure how to

21      distinguish them for purposes of the question.  So,
let

22      me ask you -- let me ask this question in a different

23      way.  Is there a risk, a security risk, or could you

24      foresee a security risk, if a private party had the

25      ability to produce their own copies of the official


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1       ballot for an election prior to the election?

2           A.   Yes.  In Georgia, we have a code that requires
--

3       SOS code that requires that all ballots be -- all live

4       ballots be stamped as "sample" prior to an election.

5           Q.   So, if I had the ability, at home or elsewhere,

6       outside the confines of the official election system,
if

7       I had the ability to produce copies, official copies
of

8       the ballot for an election, and multiple copies, would

9       that represent a security risk, in your opinion?

10          A.  It would, especially in an optical scan

11      jurisdiction.

12          Q.  Do you consider Pima County to be an optical
scan

13      jurisdiction?

14          A.  I do.

15              MR. DENKER:  I believe that's all I have.

16                          EXAMINATION

17      BY MR. RISNER:

18          Q.  Yeah, Mr. King, you responded that a false set
of

19      returns would be an enormous security risk.  What are

20      you talking about?

21          A.  A counterfeit set of election returns that
could

22      create confusion in the public's mind about which

23      constitute the official results of an election.

24          Q.   Okay.  What's a counterfeit set of election

25      returns?

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1          A.   An election report that's erroneous but mimics

2     the reports produced by the election management

system.

3          Q.   I want to make sure I understand what you're

4     talking about.  So, where would this report come from?

5     Where would that data come from?

6               MR. DENKER:  Objection to form, foundation.

7          A.   Are you asking where would the counterfeiters

8     acquire the information?

9          Q.   (By Mr. Risner)  Okay.

10         A.   If they had access to the MDB files for a live

11    election --

12         Q.   Yeah.

13         A.   -- they could fabricate their own results,

embed

14    that into the system and present it as the results of

an

15    election.

16         Q.   What do you mean "embed" it in the system?

17    What's that mean?

18         A.   Embed it into the MDB tables, enter it into the

19    tables.

20         Q.   I don't -- now I'm not following this.  So how

21    would they -- how would they get this?  We're talking

22    about, like us, say the Democratic Party --

23         A.   Um-hum.

24          Q.   -- if the county gave us a copy of their
election

25          database --


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1          A.   Um-hum.

2          Q.   -- when the election's over, is that -- at what

3          point in time did you assume that the Democratic Party

4          would get a copy of the election database?

5          A.   Well, I didn't assume that the Democratic Party

6          would get a copy of the election database.  You asked

7          me --

8          Q.   Well, did your answer assume --

9          A.   Well, you asked me how could a counterfeit copy

10         of election results be produced.

11         Q.   No.  No.  Your lawyer asked you a question,

12         right?

13         A.   He's asked several questions, yes.

14         Q.   Yeah.  And he asked you one about this false
set

15         of returns.

16         A.   Um-hum.

17         Q.   What did you -- tell me what -- if you could

18         explain to me what he was asking so that I'll
understand

19      your answer a little better.

20              MR. DENKER:  Objection to form, foundation.

21      Q.  (By Mr. Risner)  Yeah.

22      A.  May we ask the reporter to read back the

23      question?

24      Q.  Well, yes, you could --

25      A.  Yes, please.


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1       Q.  -- but I don't -- sure.

2               (Following read by court reporter:  "Question:

3       Would it, in your opinion, constitute a breach of

4       security if we were to make it possible for a private

5       party to generate a false set of election returns that

6       are forensically indistinguishable from the official
set

7       of election returns, would that be a security risk?

8       Answer:  That would be an enormous security risk.")

9       A.  So, your question to me was:  Why is that an

10      enormous security risk?

11      Q.  No.

12      A.  Oh.

13      Q.  This is an area where you said you've been
asked

14      to render an opinion, right?

15          A.   Correct.

16          Q.   Okay.  Now, if they released the -- what is it

17     that he was asking would be released to the public?

18     What's your understanding of what would be released to

19     the public?

20          A.   The election database.

21          Q.   Yeah.  When?  At what point in time?

22          A.   He didn't specify.

23          Q.   Does it matter to you?

24          A.   Yes.

25          Q.   Okay.  So, in your opinion, you must have had,
in


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 1     your own mind, an idea of when in the process that
was,

 2     since it mattered to your opinion.

 3          A.   Yes.

 4          Q.   Yeah.  When did you think he was talking about?

 5          A.   I assumed during the election.

 6          Q.   Okay.  And what does that mean, "during the

 7     election"?

 8          A.   Before the election is certified by the

 9     jurisdiction.

10          Q.   Okay.  And so if it's after the election is

11      certified by the jurisdiction, is your opinion

12      different?

13          A.  Slightly different.

14          Q.  How would it be different?

15          A.  It goes from being an enormous security risk to
a

16      high security risk.

17          Q.  Okay.  So, if it's after certification, why
would

18      it be a high security risk?

19          A.  I think that the revelation of the architecture

20      of the database, in and of itself, is a security risk,

21      because it reveals the organization of the data.
That's

22      a critical requisite piece for a hacker to begin to

23      mount a hack against an election.

24          Q.  Okay.  So you're saying it would be a high

25      security risk for the next election, not for that


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1       election; is that correct?

2           A.  It would be a high security risk for all

3       subsequent elections within and without Pima County.
It

4       would still be, I think, a potential security risk for

5       the current election, because what is the assumption

6      about the skill set of the recipients of the user --
I'm

7      sorry -- the recipients of that MDB file.

8         Q.   Why would it be a security risk for the current

9      election after the election had been certified?

10        A.   To create confusion on the part of the public's

11     mind about what are the official results of the

12     election.

13        Q.   Are you aware of that ever happening anywhere
in

14     the United States of America?

15        A.   Of what happening?

16        Q.   Where someone got a copy of a database after
the

17     election and sowed confusion as to what the outcome
was.

18        A.   I'm aware that people contest elections all the

19     time and dispute the counts of elections.

20        Q.   Yeah.

21        A.   Whether they have done so with the GEMS MDB
file

22     or not, I do not know.

23        Q.   Well, of course, someone can.  You know, they
can

24     have a recount or a specific challenge.  But I thought

25     you said that someone would just be sowing confusion.


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1          MR. DENKER:  Object to form, foundation.

2          A.  I said it could create confusion about the

3      official results of an election if the MDB file
released

4      to the public is used to produce counterfeit results.

5          Q.  (By Mr. Risner)  What would be the purpose of

6      someone producing counterfeit results?

7          A.  I can't speculate on that.

8          Q.  Well, why not?  I mean, how can you have an

9      opinion about the security risk if you can't even

10     speculate on it?

11         A.  Well, speculate on the motives of why people

12     would produce counterfeit results?

13         Q.  Sure.

14         A.  Why people commit election fraud?

15         Q.  Election fraud maybe is a separate question.
I'm

16     asking about counterfeit results.

17         A.  Well, I think counterfeit results would
certainly

18     fall under most jurisdictions' statute of election

19     fraud.

20         Q.  Okay.  Well, I don't understand this.

21         A.  Why people commit election fraud?

22         Q.  Merle, I don't understand what you're talking

23     about, so you really have to help me out here.

24          A.   Okay.

25          Q.   Let's say that Pima County gives the Democratic

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1      Party a copy of the database, you say after the

2      election's certified.  Okay?

3          A.   Um—hum.

4          Q.   And let's assume they give it to the Republican

5      Party, because we believe all political parties get
it,

6      and the Libertarian party.  Okay?  And let's assume
that

7      one of these political parties decides to sow
confusion.

8      What would they do?

9          A.   Are you asking me to speculate on what they
would

10     do?

11         Q.   Sure.  Heck, yes.  It's your opinion that it's
a

12     high risk.  Obviously you have some thoughts in this

13     matter.

14         A.   Produce election reports using purloined copies

15     of GEMS that mimic official election results.

16         Q.   Yes.  Then what is going to happen?  They'll
hold

17     a press conference?

18        A.  Perhaps.

19        Q.  Now, if it's before it's certified, same deal?

20        A.  Well, I think the risk is perhaps greater at that

21     point.

22        Q.  Okay.  Why?

23        A.  In order to mount a successful hack on a live

24     election, the hacker would need to know the structure of

25     the database.  So putting that database into the wild,


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1     while the election is still live, would be a

2     considerable risk.

3        Q.  Which part of the structure would create the

4     risk?

5            MR. DENKER:  Object to form, foundation.

6        A.  My opinion would be that the entire structure

7     needs to be protected.

8        Q.  (By Mr. Risner)  Yeah, which part of the

9     structure would create the risk?

10        A.  Not exclusively, but the user IDs and the

11     passwords.

12        Q.  And how would a political party on the outside

13     get the hacked database back into the county's

computer?

14          MR. DENKER:  Objection, form, foundation.

15      A.  I can't speculate on that.  That would either
be

16      their method of hacking the election or how they might

17      go about it.

18      Q.  (By Mr. Risner)  That's all the questions I
have.

19      Well, wait, wait.

20          MR. MARCH:  Two things.  Two items.

21          MR. RISNER:  Hold on.

22      Q.  (By Mr. Risner)  Let me ask you this.  Does
GEMS

23      use the SQL portion of the database to create ballot

24      layouts?

25      A.  What do you mean by "ballot layout"?


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1       Q.  Ballot format.

2           MR. MARCH:  Definition.

3       Q.  (By Mr. Risner)  Definition.

4       A.  Those are all three different things.

5       Q.  Okay.  Make it three different questions.

6       A.  It uses the SQL to produce the ballot layout.

7       Q.  Earlier I thought you said that the SQL was
used

8      for creating reports.

9          A.   Displays, reports and displays.

10         Q.   So, you think that GEMS uses the SQL in the

11     database also to create ballot layouts?

12         A.   Layout is a display.

13         Q.   Huh?

14         A.   Layout is a display.

15         Q.   What else is displayed that's created by SQLs
in

16     the database and not in GEMS itself?

17         A.   Well --

18             MR. DENKER:   Object to form, foundation.

19         A.   -- I would have to look at the reports to give

20     you a list of what's generated.

21         Q.   (By Mr. Risner)  Have you talked to Diebold

22     personnel about what SQL does in the database?

23         A.   I've had conversations with Diebold -- I'm

24     sorry -- Diebold, or now Premier, personnel on the

25     function of the queries and the tables in the GEMS


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1      database.  I can't recall specific conversations about

2      the SQL.

3          Q.   Are you relying on what they told you for any
of

4      your opinions in this case?

5          A.   No.

6          Q.   Are you relying on any written reports by
anyone

7      for your opinions in this case?

8          A.   I'm not sure I understand your question.  My

9      opinions are the culmination of reading a lot of

10     reports --

11         Q.   Okay.  But in terms of the --

12         A.   -- including the Brennan report, the Berkeley

13     report, the SAIC report, the Robert report.

14         Q.   Really what I'm thinking about is the SQL
queries

15     in the database.  Is there any written report that

16     discusses that or its function?

17         A.   Not that I can recall.

18              MR. RISNER:  That's all I have.

19                           EXAMINATION

20     BY MR. DENKER:

21         Q.   I just wanted to clarify one -- one question
and

22     answer.  And what I understood the question to be was,

23     how do they get it back into the county system, was
the

24     question that Mr. Risner had asked you.  And you said

25     you can't speculate as to what their method would be.

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 1              What was your understanding of what that
question

 2       was and what was your answer to that?

 3           A.  Well, I understood counsel to ask me about a

 4       specific technique for an intrusion, which was to take

 5       the modified database back into the GEMS environment.

 6       And one of the difficulties in dealing with hackers is

 7       that their methods are constantly evolving, so it's

 8       challenging to speculate on a specific strategy that

 9       someone would use to hack an election.

10           Q.  Okay.  In that case, then, I do have another

11       question.  Would there be a security risk associated

12       with a private party's ability to generate a false set

13       of election returns, even if they did not return it to

14       the county's election system computers?

15           A.  I -- I'm struggling with an answer to that

16       question, because unless you know how the election

17       results are certified, it's difficult to know where

18       potential insertion points are for a bogus report in

19       that system.

20           Q.  Okay.

21           A.  So the insertion could come after it leaves a

22       server in a facility, and I think you'd have to look
at
```

23      the -- the spectrum of activities that surround the

24      tabulation and the reporting of results.

25          Q.  Fair enough.


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1              MR. DENKER:  That's all I have.

2                         EXAMINATION

3      BY MR. RISNER:

4          Q.  I have a question.  Are you aware of any hacker

5      strategy that does not require access to a computer?

6          A.  Oh, yeah.

7          Q.  Tell me about them.

8          A.  There is some time-honored traditions of
fishing

9      through garbage cans to get data.  Hacking does not

10     necessarily mean restricted to a computer system.

11     Hackers hack into information systems using mechanical

12     methods, social engineering.

13         Q.  So, when you use the term "hacking" into a

14     computer, that includes going through garbage and

15     reading data?

16         A.  Could.

17         Q.  So, define "hacking into a computer" for me.
I'm

18     befuddled.

19          A.   One of the reasons that most facilities shred
all

20          of their reports, or in some cases shred and burn on

21          site their reports, is that printed hard copies often

22          contain access code information, log-ins, et cetera.

23          So, the initial starting point for a hack may not be
on

24          a computer.   It may be through social engineering,
phone

25          calls, site visits, et cetera.


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1          Q.   What's "social engineering"?

2          A.   Try to extract data from users through

3          manipulation, through telephone conversations,

4          face-to-face conversations, et cetera.

5          Q.   Okay.   So, let's assume that a very successful

6          social engineering went on, and some outsiders got the

7          password --

8          A.   Um-hum.

9          Q.   -- and went through the garbage.   How are they

10          going to get whatever information they want into a

11          central computer?

12               MR. DENKER:   Object to form, foundation.

13          A.   What's the architecture of the computer?

14          Q.   (By Mr. Risner)   Well, the computer is not on

the

    15      Internet, doesn't have Wi-Fi, is not part of a
network,

    16      and is sitting in a rack with observable cables that
go

    17      to it only --

    18          A.  Um-hum.  Um-hum.

    19          Q.  -- in a locked room, with cameras on it.  How
are

    20      they going to get that into that computer?

    21          A.  I don't know.

    22          Q.  I'll accept that answer, sure.  You can't think

    23      of a way, can you?

    24          A.  No, I can think of a way, but you asked me how

    25      would they do it.  If you're asking me what are the


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     1      possible methods?

     2          Q.  Yeah.  Sure.  Tell me.

     3          A.  The unit goes out for repair.

     4          Q.  Ah, okay.  Got anything else?

     5          A.  Well, that's an example.

     6          Q.  Yeah, that's one, yeah.  Got a two or three?

     7          A.  Not off the top of my head.

     8          Q.  Okay.  And if it goes out to repair, then that

     9      gives someone the opportunity to physically access the

10      machine?

11          A.   That's correct.

12          Q.   Without physically accessing the machine, how are

13      they going to do it?

14          A.   Well, again, you have to know the continuity of

15      how the election results are reported.  Those results

16      are not instantly certified in the GEMS server.  So

17      those results have to somehow leave the GEMS server

18      before they're certified by the election superintendent,

19      the county or the secretary of state, whoever is

20      responsible for certification.

21              So, what happens when it leaves that system prior

22      to certification is also part of the vulnerability in

23      that system.  Is it written to media?  How is that media

24      transported?  Who transports the media?  What's the

25      chain of custody for the media?


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1          Q.   Sure.  But then you can go back and re-create it

2       by getting, you know, and checking the original

3       computer, correct?

        4         A.   You can produce multiple versions of ——
multiple

        5     copies, I should say, of reports.

        6         Q.   Right.

        7              MR. RISNER:  Okay.  That's all I have.

        8              MR. DENKER:  We're finished.  We'll read and

        9     sign.

       10

       11

       12                        *    *    *    *

       13

       14

       15         (Whereupon deposition concluded at 12:31 p.m..)

       16

       17         _____

       18                        MERLE KING

       19

       20

       21

       22

       23

       24

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         1                    CERTIFICATE

         2    State Of Arizona )

         3                    )ss

         4    County of Pima   )

         5       BE IT KNOWN that I, Mary Meyer, R.P.R., took the

         6    foregoing deposition pursuant to Notice at the time
and
         7    place stated in the caption hereto; that I was then
and
         8    there a Certified Court Reporter in and for the State
of
         9    Arizona; that by virtue thereof, I was authorized to

        10    administer an oath; that the witness, MERLE KING
before
        11    testifying, was duly sworn according to law, and that

        12    the testimony of the witness was reduced to writing

        13    under my direction.

        14       I DO FURTHER CERTIFY that I am not of counsel nor

        15    attorney for either or any of the parties to said
cause
        16    or otherwise interested in the event thereto, and that
I
        17    am not related to either or any of the parties to said

        18    action.

        19       (X) Pursuant to request, notification was provided

        20    that the deposition is available for review and

        21    signature.

        22       ( ) Deposition review and signature was waived
```

23          WITNESS MY HAND THIS 17th day of November, 2007.

24          _____

25          Mary Meyer, R.P.R., Certified Reporter 50225

EXHIBIT

C

UNITED STATES DISTRICT COURT FOR
THE NORTHERN DISTRICT OF GEORGIA
ATLANTA DIVISION

|  |  |
|---|---|
| CURLING, et al.<br><br>Plaintiffs,<br><br>vs.<br><br>BRAD RAFFENSPERGER, et al.<br><br>Defendants. | )<br>)<br>)<br>)<br>)   **CIVIL ACTION NO.:**<br>)   **1:17-cv-2989-AT**<br>)<br>)<br>)<br>)<br>)<br>)<br>) |

## SUPPLEMENTAL DECLARATION OF MATTHEW D. BERNHARD

**MATTHEW D. BERNHARD** declares, under penalty of perjury, pursuant to 28 U.S.C. § 1746, that the following is true and correct:

1.      This declaration supplements my previous declaration of August 03, 2018 [Doc. 258-1 ¶ 33-42].

2.      The opinions expressed at the time of the previous declaration continue to represent my opinions

3.      To assess whether the inadequacies of Georgia's voting system have had an impact on election results, a good first step is to examine the accuracy of the data used by the system to configure the voting machines.

4.      This data is stored in the GEMS database, and while there are numerous avenues by which data in the database may be corrupted prior to its entry into the database, once bad data is in the database, it has the potential to significantly impact the functionality of the rest of the voting system, including but not limited to the election management system, the electronic poll books, and the voting machines themselves. Examining the database is an useful step to determine whether the voting system has errors, bugs, or malicious code that may have had an impact upon election outcomes.

5.      The detailed analysis of the GEMS database sought by the Coalition Plaintiffs is labor intensive clerical work: examining the data in the table for any inconsistencies (like candidate identifiers not matching or candidates not appearing in a race where they should). Potential mistakes can be flagged by analysts without extensive knowledge of computer science.

6.      The fact that the GEMS database is not sensitive is reflected in the fact that it is distributed to every county in Georgia and accessed by thousands of poll workers across the state.  All 159 counties have multiple copies of GEMS databases which appear to be accessible without restriction by election staff. Allowing the plaintiffs to examine the database creates no additional risk.

## DATABASES AND MICROSOFT ACCESS

7.      Databases are a well-studied and developed field of computer science, and nearly every computer application in existence has some interaction with a database. The most common kind of database is a relational database, where data is stored as a series of tables and entries that have some kind of relation with other similar pieces of data. Common relational database applications include SQL and Microsoft Access.

8.      Because certain data types in the database can have arbitrary length, if a program is reading from the database and does not properly account for the length of the data, it may accidentally read so much data that it overwrites its own program. This is what is known as a *buffer overflow* (a *buffer* is where data is kept when it is being read out of a file or database). Overflows may occur due to incorrect lengths being specified in the database, improperly formatted character sequences, or simply data that is unexpectedly long. A clever attacker can craft data that, when the program reads the data in, results in a buffer overflow and overwrites the original program with code that the attacker wrote. This is a buffer overflow attack, or an exploitation of a buffer overflow, and it is one of the most common ways that hackers gain unauthorized access to systems.

9.      Even though the data in the database is not treated as code that can be executed by a computer, if the data overwrites a piece of the program that is reading the data it will be executed by the computer as if it were part of the program.  Even in the absence of malicious intent, a buffer overflow vulnerability can result in unexpected or undetected behavior by a program.

10.     Another common threat vector for database programs (in particular Microsoft Access) is the use of macros, which are small programs that can be written inside the database program to assist in arduous or repetitive tasks. These macros, while powerful, also present a major security vulnerability to most database engines, as malicious macros can take over the database software and corrupt data.

11.     However, even if macros are entirely disabled, if data in the database is not formatted in a way that the program reading it expects, it can still lead to a buffer overflow. Regardless of whether macros are enabled or not, data that exists in the database can still result in unexpected or malicious behavior to occur in the program that is reading the data.

**THE GEMS DATABASE**

12.     The GEMS database contains all data used by the GEMS system to set up an election, program poll books and voting machines, and tabulate results. In many states, including Arizona, Colorado and California, the database is publicly available for scrutiny. In examples of the GEMS database which I have examined, from multiple jurisdictions using multiple versions of the GEMS software, no data contained in the database poses a privacy threat to voters or exploitation of the voting system by being disclosed. The structure of the database is disclosed in GEMS manuals that have been publicly available since the system was first put in service.[1]

13.     GEMS databases are Microsoft Access databases, and can be opened by any Microsoft Access program.

14.     The tables in the GEMS database store a variety of information about an election (see Exhibit **TK**), including candidate names and party affiliation, jurisdictions, information about the voter access cards, ballot styles, how election results should be reported, precincts, polling locations, ballots layout, and so on. At the conclusion of the election, results are also written into the database, including how many votes were cast on each machine in each precinct, how many votes were cast for each candidate, the number of write-in votes, and so forth.

15.     An error in the data entry into the GEMS database, such as switching the two identifiers for two candidates, could have an impact on the outcome of an election without being easily detected. Worse, if an error in the database causes a

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[1] For an example, see : http://blackboxvoting.org/docs/diebold/GEMS_1.18_Users_Guide_Revision_12.pdf

buffer overflow, the error may not be reported in subsequent data reporting mechanisms by the GEMS system, like the system report PDFs that GEMS can generate. The only way to know if there is bad data in the database which might cause unexpected behavior when in use is to examine the database itself.

16.    Example of other errors that a clerical review of the GEMS database may detect include:

- Mathematical errors in vote tallies and the formulas that generate them;

- Inaccurate inclusion or exclusion of precincts or voters permitted to vote on certain races;

- Switching candidate numbers causing the votes to be recorded for the wrong candidate;

- Failure to upload all voting machine memory cards containing votes on election night (a well-documented, frequent error);

- Discrepancies between poll tape reports and officially reported vote tallies;

- Identification of malfunctioning machines with anomalous results;

- Leaving a candidate or question off certain ballots in error.

- Failure to properly add all eligible provisional ballots.

- Odd data formatting that may induce unexpected behavior by various components of the voting system, including but not limited to GEMS and the voting machines. For example, if a precinct name was "pasted" into the table, the name may include control characters that the database engine or programs which use the database may not expect.

17.    If the initial review of the GEMS database fails to identify any anomalies, this does not fully exonerate the system. However, it will provide much better footing with which to target the evaluation of other components of the system forensically, and would rule out the hypothesis that incorrect configuration is the cause of many of the anomalous behavior exhibited by Georgia's voting system. As examining the GEMS database requires little technical expertise, does not require stringent security procedures, and the database can be easily produced by the defendants, its examination is the most efficient way to proceed in a forensic investigation of Georgia's voting system and will provide a good basis for future forensic investigations requiring expertise of computer scientists.

**GEMS DATABASE REPORTS**

18.    Some of the data contained within the GEMS database is also present in the reports generated by the GEMS software. Examples of the specific reports that the state has offered are shown in Exhibits **TK**, and include:

● Base Precincts with Race Report: an accounting of which races appeared on the ballot in each precinct;

● Vote Center with Cards Report: an accounting of which memory cards and ballot styles were present in each precinct;

● Statement of Votes Cast Report: Election results by precinct for every candidate on the ballot in each precinct;

● Summary Report: summarized election result including breakdowns by type of ballot cast (early voting, absentee by mail, and so on);

● Ballot Image Report: a text representation of every ballot recorded by the voting system during the election (one report for every ballot cast, i.e. millions of pages of data from just the November 2018 election alone).

19.    These reports fail to provide crucial information contained in the GEMS database. Due to the potential vulnerabilities discussed above, and the fact that these reports are generated by the GEMS database itself, it is entirely possible that errors which reside in the database would not be appear in these reports. For example, if a field in the database incidentally triggers a buffer overflow, this error may not appear in the written report.

20.    These reports also do not contain all of the data in the GEMS database that is germane to an inquiry about configuration errors or malware. For example, nothing in the reports would show a miscoding of a candidate's name.  Vote totals which were erroneously counted for Candidate A due to a misconfiguration, for example, would also appear that way in the reports. Essentially, the reports do not create an independent evidentiary trail with which to assess the correctness of the GEMS database, because they (a) do not contain all of the data in the database and (b) will not exhibit errors in a detectable way.

21.    Not only do these reports not constitute a faithful recreation of the GEMS database, but they create a significant burden on the investigation. The database is fully searchable and can be examined using standard database tools. GEMS reports are PDFs, which would preclude the usage of tools that could facilitate easy comparison and validation of entries. Examining and testing tabulations on millions of pages of ballots image reports alone would take far more time than a full forensic investigation of the entire GEMS server.

22.     I understand that the State Defendants contends that the integrity of the GEMS Database, and other aspects of Georgia's system, is confirmed by using what is called "hash" comparisons between the suspect program and a known uncompromised version. The only thing such hash comparisons can establish is whether or not two copies of a file are identical. The kinds of errors that Plaintiffs seek to investigate by reviewing the GEMS database are likely to occur in all copies of a particular database file. Therefore, hash comparisons can in no way substitute for a detailed review of the database contents.

This 1ˢᵗ day of July, 2019.

Matthew D. Bernhard

CounterGroup                                                    6/26/2019

| KeyId | Label | ShortLabel | SortSeq | VGroup1Id | VGroup2Id |
|---|---|---|---|---|---|
| 0 | Polling | POLL | 10 | 0 | 0 |
| 1 | Early | EARLY | 20 | 0 | 0 |
| 2 | Provisional | PROV | 30 | 0 | 0 |

CounterGroup                                        6/26/2019

| PerCards | ExportId | UseArtworkPctl | UseArtworkCGr |
|---|---|---|---|
| 100 | | 1 | 0 |
| 100 | | 1 | 0 |
| 100 | | 1 | 0 |

Candidate                                                                6/26/2019

| KeyId | Label | SortSeq | CandidateType | ExportId |
|---|---|---|---|---|
| 9 | KIRKPATRICK, A | 10 | 0 | |
| 10 | CARMONA, RIC | 10 | 0 | |
| 35 | CAJERO BEDFO | 10 | 0 | |
| 41 | PANCRAZI, LYN | 10 | 0 | |
| 47 | FARLEY, STEVE | 10 | 0 | |
| 53 | BRADLEY, DAVI | 10 | 0 | |
| 67 | FLEMING, PAT | 10 | 0 | |
| 90 | DALESSANDRO, | 10 | 0 | |
| 91 | GABALDÓN, R | 20 | 0 | |
| 150 | LEACH, ROBER | 10 | 0 | |
| 151 | STONEBRAKER, | 20 | 0 | |
| 179 | BARBER, RON | 10 | 0 | |
| 188 | GRIJALVA, RAÚ | 10 | 0 | |
| 195 | LOPEZ, LINDA | 10 | 0 | |
| 203 | HOLT, JO | 10 | 0 | |
| 210 | GONZALES, SAL | 10 | 0 | |
| 211 | SALDATE, MAC | 20 | 0 | |
| 220 | SIDHWA, MOH | 10 | 0 | |
| 221 | STEELE, VICTO | 20 | 0 | |
| 224 | MACH, STEFAN | 10 | 0 | |
| 226 | WHEELER, BRU | 20 | 0 | |
| 233 | JOSEPH, DAVE | 10 | 0 | |
| 244 | BUSCHING, MA | 10 | 0 | |
| 245 | KENNEDY, SAN | 20 | 0 | |
| 246 | NEWMAN, PAU | 30 | 0 | |
| 256 | YOUNG WRIGH | 10 | 0 | |
| 265 | VALADEZ, RAM | 10 | 0 | |
| 271 | BRONSON, SHA | 10 | 0 | |
| 283 | ELIAS, RICHAR | 10 | 0 | |
| 289 | LAWALL, BARB | 10 | 0 | |
| 295 | DUPNIK, CLARE | 10 | 0 | |
| 306 | RODRIGUEZ, F. | 10 | 0 | |
| 312 | RICHARDSON, | 10 | 0 | |
| 318 | STAPLES, BILL | 10 | 0 | |
| 328 | CASTILLO JR., J | 10 | 0 | |
| 329 | Write-in 20 | 20 | 1 | |
| 333 | DOLNY, CARME | 10 | 0 | |
| 334 | Write-in 20 | 20 | 1 | |
| 338 | SIMON, PAUL | 10 | 0 | |
| 339 | Write-in 20 | 20 | 1 | |
| 343 | FELIX, MARIA L. | 10 | 0 | |
| 344 | Write-in 20 | 20 | 1 | |

Candidate                                                                6/26/2019

| KeyId | Label | SortSeq | CandidateType | ExportId |
|---|---|---|---|---|
| 353 | RADEMAKER, J | 10 | 0 | |
| 359 | DRISCOLL, JIM | 10 | 0 | |
| 365 | BERNAL, BENN | 10 | 0 | |
| 375 | DORGAN, MAR | 10 | 0 | |
| 376 | Write-in 20 | 20 | 1 | |
| 380 | PHILIP, COLETT | 10 | 0 | |
| 447 | Write-in 20 | 20 | 1 | |
| 452 | YES | 10 | 0 | |
| 453 | NO | 20 | 0 | |
| 454 | YES | 10 | 0 | |
| 455 | NO | 20 | 0 | |
| 456 | YES | 10 | 0 | |
| 457 | NO | 20 | 0 | |
| 458 | YES | 10 | 0 | |
| 459 | NO | 20 | 0 | |
| 460 | YES | 10 | 0 | |
| 461 | NO | 20 | 0 | |
| 462 | FLAKE, JEFF | 20 | 0 | |
| 464 | PATON, JONAT | 20 | 0 | |
| 466 | MCSALLY, MAR | 20 | 0 | |
| 468 | SAUCEDO MER | 20 | 0 | |
| 469 | GUERRA, BLAN | 30 | 0 | |
| 470 | Write-in 40 | 40 | 1 | |
| 471 | Write-in 30 | 30 | 1 | |
| 473 | MOTT, TYLER | 20 | 0 | |
| 474 | Write-in 30 | 30 | 1 | |
| 475 | ANTENORI, FRA | 20 | 0 | |
| 476 | Write-in 30 | 30 | 1 | |
| 477 | MELVIN, AL | 20 | 0 | |
| 478 | Write-in 30 | 30 | 1 | |
| 479 | GRIFFIN, GAIL | 20 | 0 | |
| 480 | Write-in 30 | 30 | 1 | |
| 481 | ACKERLEY, JOH | 30 | 0 | |
| 482 | Write-in 40 | 40 | 1 | |
| 483 | Write-in 30 | 30 | 1 | |
| 485 | ORR, ETHAN | 30 | 0 | |
| 486 | Write-in 40 | 40 | 1 | |
| 488 | Write-in 40 | 40 | 1 | |
| 489 | Write-in 50 | 50 | 1 | |
| 490 | CLODFELTER, T | 30 | 0 | |
| 491 | VOGT, TED | 40 | 0 | |
| 492 | Write-in 50 | 50 | 1 | |

Candidate                                              6/26/2019

| KeyId | Label | SortSeq | CandidateType | ExportId |
|---|---|---|---|---|
| 493 | Write-in 60 | 60 | 1 | |
| 494 | KWASMAN, AD | 20 | 0 | |
| 495 | SMITH, STEVE | 30 | 0 | |
| 496 | Write-in 40 | 40 | 1 | |
| 497 | Write-in 50 | 50 | 1 | |
| 498 | GOWAN, DAVI | 30 | 0 | |
| 499 | STEVENS, DAVI | 40 | 0 | |
| 500 | Write-in 50 | 50 | 1 | |
| 501 | Write-in 60 | 60 | 1 | |
| 503 | YES | 10 | 0 | |
| 504 | NO | 20 | 0 | |
| 505 | YES | 10 | 0 | |
| 506 | NO | 20 | 0 | |
| 509 | YES | 10 | 0 | |
| 510 | NO | 20 | 0 | |
| 513 | YES | 10 | 0 | |
| 514 | NO | 20 | 0 | |
| 515 | YES | 10 | 0 | |
| 516 | NO | 20 | 0 | |
| 517 | YES | 10 | 0 | |
| 518 | NO | 20 | 0 | |
| 519 | BITTER SMITH, | 40 | 0 | |
| 520 | BURNS, ROBER | 50 | 0 | |
| 521 | STUMP, BOB | 60 | 0 | |
| 525 | MILLER, ALLY | 20 | 0 | |
| 526 | Write-in 30 | 30 | 1 | |
| 527 | KELLEY, JAMES | 20 | 0 | |
| 528 | Write-in 30 | 30 | 1 | |
| 529 | BELL, TANNER | 20 | 0 | |
| 530 | Write-in 30 | 30 | 1 | |
| 531 | CARROLL, RAY | 10 | 0 | |
| 532 | Write-in 20 | 20 | 1 | |
| 533 | GONZALES, FER | 20 | 0 | |
| 534 | Write-in 30 | 30 | 1 | |
| 535 | Write-in 20 | 20 | 1 | |
| 536 | NAPIER, MARK | 20 | 0 | |
| 537 | CROTEAU, DAV | 30 | 0 | |
| 538 | Write-in 40 | 40 | 1 | |
| 539 | BEARD, BILL | 20 | 0 | |
| 540 | Write-in 30 | 30 | 1 | |
| 541 | FORD, BETH | 20 | 0 | |
| 542 | Write-in 30 | 30 | 1 | |

Candidate                                                                6/26/2019

| KeyId | Label | SortSeq | CandidateType | ExportId |
|---|---|---|---|---|
| 543 | Write-in 20 | 20 | 1 | |
| 544 | ARZOUMANIA | 10 | 0 | |
| 545 | Write-in 20 | 20 | 1 | |
| 546 | PEYTON, JACK | 10 | 0 | |
| 547 | Write-in 20 | 20 | 1 | |
| 548 | LESTER, DAVID | 20 | 0 | |
| 549 | Write-in 30 | 30 | 1 | |
| 550 | Write-in 20 | 20 | 1 | |
| 551 | BROWN, R. C. | 10 | 0 | |
| 552 | ROBERTS, VINC | 10 | 0 | |
| 553 | YES | 10 | 0 | |
| 554 | NO | 20 | 0 | |
| 555 | YES | 10 | 0 | |
| 556 | NO | 20 | 0 | |
| 557 | WHITEHOUSE, | 10 | 0 | |
| 558 | Write-in 20 | 20 | 1 | |
| 559 | GALVIN, SAND | 10 | 0 | |
| 560 | HOWELL, BRUC | 20 | 0 | |
| 561 | SHILLING, MIKE | 30 | 0 | |
| 562 | ST. JOHN, VALE | 40 | 0 | |
| 563 | Write-in 50 | 50 | 1 | |
| 564 | Write-in 60 | 60 | 1 | |
| 565 | Write-in 70 | 70 | 1 | |
| 566 | Write-in 30 | 30 | 1 | |
| 567 | DI NOTO, FRED | 20 | 0 | |
| 568 | HANSEN, DENN | 30 | 0 | |
| 569 | HEIDINGER, DO | 40 | 0 | |
| 570 | SARGENT, JEFF | 50 | 0 | |
| 571 | TREECE, MICH | 60 | 0 | |
| 575 | LANNON, ALBE | 10 | 0 | |
| 576 | MCCOOL, PEG | 20 | 0 | |
| 577 | ROBLES, ERNIE | 30 | 0 | |
| 578 | SEESE, DAVID S | 40 | 0 | |
| 579 | Write-in 50 | 50 | 1 | |
| 580 | Write-in 60 | 60 | 1 | |
| 581 | Write-in 70 | 70 | 1 | |
| 582 | BERRY, ANTHO | 10 | 0 | |
| 583 | CARDILLO, RIC | 20 | 0 | |
| 584 | IZZO, RON | 30 | 0 | |
| 585 | RINALDI, JENNI | 40 | 0 | |
| 586 | RUPPEL, DOUG | 50 | 0 | |
| 587 | Write-in 60 | 60 | 1 | |

Candidate                                          6/26/2019

| KeyId | Label | SortSeq | CandidateType | ExportId |
|---|---|---|---|---|
| 588 | Write-in 70 | 70 | 1 | |
| 589 | Write-in 80 | 80 | 1 | |
| 590 | BALL-CUMMIN | 10 | 0 | |
| 591 | CHUMNEY, JOA | 20 | 0 | |
| 592 | GUISE, ALECIA J | 30 | 0 | |
| 593 | KENDRICK, GAR | 40 | 0 | |
| 594 | SNIFFEN, MICH | 50 | 0 | |
| 595 | Write-in 60 | 60 | 1 | |
| 596 | Write-in 70 | 70 | 1 | |
| 597 | BOTEILHO, LOR | 10 | 0 | |
| 606 | Write-in 10 | 10 | 1 | |
| 607 | Write-in 20 | 20 | 1 | |
| 608 | Write-in 30 | 30 | 1 | |
| 610 | CANTON, ANT | 20 | 0 | |
| 611 | GUNDERSON, L | 30 | 0 | |
| 612 | HEDDEN, ROBE | 40 | 0 | |
| 613 | MURPHY, LEO | 50 | 0 | |
| 614 | Write-in 60 | 60 | 1 | |
| 615 | Write-in 70 | 70 | 1 | |
| 616 | Write-in 80 | 80 | 1 | |
| 617 | Write-in 90 | 90 | 1 | |
| 618 | BAKARI, MENE | 10 | 0 | |
| 619 | CAMPOS-FLEE | 20 | 0 | |
| 620 | COTTON, DON | 30 | 0 | |
| 621 | CUEVAS, MIGU | 40 | 0 | |
| 622 | ELLINWOOD, R | 50 | 0 | |
| 623 | FOSTER, KRISTE | 60 | 0 | |
| 624 | HUNNICUTT, J | 70 | 0 | |
| 625 | JUAREZ, CAM S | 80 | 0 | |
| 626 | MEDLER, ROBE | 90 | 0 | |
| 627 | PUTNAM-HIDA | 100 | 0 | |
| 628 | STEGEMAN, M | 110 | 0 | |
| 629 | SUGIYAMA, AL | 120 | 0 | |
| 630 | Write-in 130 | 130 | 1 | |
| 631 | Write-in 140 | 140 | 1 | |
| 632 | Write-in 150 | 150 | 1 | |
| 633 | CONDRA, ROG | 10 | 0 | |
| 634 | HOPKINS, SUZA | 20 | 0 | |
| 635 | LOPEZ, MARIBE | 30 | 0 | |
| 636 | POST, DAN | 40 | 0 | |
| 637 | Write-in 50 | 50 | 1 | |
| 638 | Write-in 60 | 60 | 1 | |

Candidate                                                                                          6/26/2019

| KeyId | Label | SortSeq | CandidateType | ExportId |
|---|---|---|---|---|
| 639 | Write-in 70 | 70 | 1 | |
| 640 | CROUCH, BUCK | 10 | 0 | |
| 641 | GARCIA, BOBB | 20 | 0 | |
| 642 | GONZALES, LO | 30 | 0 | |
| 643 | PAVEY, MALCO | 40 | 0 | |
| 644 | Write-in 50 | 50 | 1 | |
| 645 | Write-in 60 | 60 | 1 | |
| 646 | Write-in 70 | 70 | 1 | |
| 647 | BURKHOLDER, | 10 | 0 | |
| 648 | COULTER, JIM | 20 | 0 | |
| 649 | KING, DEBBIE K | 30 | 0 | |
| 650 | KMAK, ANGELA | 40 | 0 | |
| 651 | STAGGS, DANA | 50 | 0 | |
| 652 | Write-in 60 | 60 | 1 | |
| 653 | Write-in 70 | 70 | 1 | |
| 654 | Write-in 80 | 80 | 1 | |
| 655 | BERTSCH, NUBI | 10 | 0 | |
| 656 | HALL, J. ELAINE | 20 | 0 | |
| 657 | HAM, KRISTEN | 30 | 0 | |
| 658 | KELLERMEYER, | 40 | 0 | |
| 659 | Write-in 50 | 50 | 1 | |
| 660 | Write-in 60 | 60 | 1 | |
| 661 | Write-in 70 | 70 | 1 | |
| 662 | YES | 10 | 0 | |
| 663 | NO | 20 | 0 | |
| 664 | YES | 10 | 0 | |
| 665 | NO | 20 | 0 | |
| 666 | YES | 10 | 0 | |
| 667 | NO | 20 | 0 | |
| 668 | YES | 10 | 0 | |
| 669 | NO | 20 | 0 | |
| 670 | YES | 10 | 0 | |
| 671 | NO | 20 | 0 | |
| 672 | OBAMA | 10 | 0 | |
| 674 | ROMNEY | 20 | 0 | |
| 675 | JOHNSON | 30 | 0 | |
| 676 | STEIN | 40 | 0 | |
| 677 | BAKER, BERYL | 20 | 0 | |
| 678 | Write-in 30 | 30 | 1 | |
| 679 | Write-in 20 | 20 | 1 | |
| 680 | Write-in 20 | 20 | 1 | |
| 681 | Write-in 20 | 20 | 1 | |

Candidate                                                                                          6/26/2019

| KeyId | Label | SortSeq | CandidateType | ExportId |
|---|---|---|---|---|
| 682 | ESCAMILLA, JU | 10 | 0 | |
| 683 | OTONDO, LISA | 20 | 0 | |
| 684 | Write-in 30 | 30 | 1 | |
| 685 | Write-in 40 | 40 | 1 | |
| 686 | Write-in 50 | 50 | 1 | |
| 687 | YES | 10 | 0 | |
| 688 | NO | 20 | 0 | |
| 689 | YES | 10 | 0 | |
| 690 | NO | 20 | 0 | |
| 691 | YES | 10 | 0 | |
| 692 | NO | 20 | 0 | |
| 693 | YES | 10 | 0 | |
| 694 | NO | 20 | 0 | |
| 695 | YES | 10 | 0 | |
| 696 | NO | 20 | 0 | |
| 697 | YES | 10 | 0 | |
| 698 | NO | 20 | 0 | |
| 699 | YES | 10 | 0 | |
| 700 | NO | 20 | 0 | |
| 701 | YES | 10 | 0 | |
| 702 | NO | 20 | 0 | |
| 703 | YES | 10 | 0 | |
| 704 | NO | 20 | 0 | |
| 705 | YES | 10 | 0 | |
| 706 | NO | 20 | 0 | |
| 710 | LEE, SYLVIA | 10 | 0 | |
| 711 | MARSHALL, SH | 20 | 0 | |
| 712 | Write-in 30 | 30 | 1 | |
| 713 | CORTEZ, MART | 10 | 0 | |
| 714 | FRIDENA, RICH | 20 | 0 | |
| 715 | SAITTA, FRANCI | 30 | 0 | |
| 716 | Write-in 40 | 40 | 1 | |
| 719 | YES | 10 | 0 | |
| 720 | NO | 20 | 0 | |
| 721 | YES | 10 | 0 | |
| 722 | NO | 20 | 0 | |
| 723 | Write-in 20 | 20 | 1 | |
| 724 | Write-in 20 | 20 | 1 | |
| 725 | VICTOR, MARC | 30 | 0 | |
| 726 | Write-in 40 | 40 | 1 | |
| 727 | ALLEN, KIM | 30 | 0 | |
| 728 | Write-in 40 | 40 | 1 | |

Candidate                                                           6/26/2019

| KeyId | Label | SortSeq | CandidateType | ExportId |
|---|---|---|---|---|
| 729 | GOHL, CHRIST | 70 | 0 | |
| 730 | MEADOWS, TH | 80 | 0 | |
| 731 | POUT, DANIEL | 90 | 0 | |
| 732 | Write-in 100 | 100 | 1 | |
| 733 | Write-in 110 | 110 | 1 | |
| 734 | Write-in 120 | 120 | 1 | |
| 735 | YES | 10 | 0 | |
| 736 | NO | 20 | 0 | |
| 737 | YES | 10 | 0 | |
| 738 | NO | 20 | 0 | |
| 739 | YES | 10 | 0 | |
| 740 | NO | 20 | 0 | |
| 741 | YES | 10 | 0 | |
| 742 | NO | 20 | 0 | |
| 743 | YES | 10 | 0 | |
| 744 | NO | 20 | 0 | |
| 745 | YES | 10 | 0 | |
| 746 | NO | 20 | 0 | |
| 747 | Write-in 50 | 50 | 1 | |
| 748 | ARCHULETA, P | 10 | 0 | |
| 749 | Write-in 70 | 70 | 1 | |
| 750 | Write-in 80 | 80 | 1 | |
| 751 | Write-in 90 | 90 | 1 | |

CandidateCounter                                    6/26/2019

| CounterBatchId | ReportunitId | CounterGroupId | CandVGroupId | TotalVotes |
|---|---|---|---|---|
| 590 | 4 | 0 | 10 | 180 |
| 590 | 4 | 0 | 41 | 240 |
| 590 | 4 | 0 | 188 | 187 |
| 590 | 4 | 0 | 244 | 157 |
| 590 | 4 | 0 | 245 | 164 |
| 590 | 4 | 0 | 246 | 160 |
| 590 | 4 | 0 | 271 | 224 |
| 590 | 4 | 0 | 289 | 255 |
| 590 | 4 | 0 | 295 | 190 |
| 590 | 4 | 0 | 306 | 221 |
| 590 | 4 | 0 | 312 | 179 |
| 590 | 4 | 0 | 318 | 250 |
| 590 | 4 | 0 | 462 | 170 |
| 590 | 4 | 0 | 468 | 161 |
| 590 | 4 | 0 | 469 | 18 |
| 590 | 4 | 0 | 503 | 193 |
| 590 | 4 | 0 | 504 | 74 |
| 590 | 4 | 0 | 505 | 191 |
| 590 | 4 | 0 | 506 | 75 |
| 590 | 4 | 0 | 509 | 189 |
| 590 | 4 | 0 | 510 | 75 |
| 590 | 4 | 0 | 513 | 192 |
| 590 | 4 | 0 | 514 | 68 |
| 590 | 4 | 0 | 515 | 189 |
| 590 | 4 | 0 | 516 | 73 |
| 590 | 4 | 0 | 517 | 191 |
| 590 | 4 | 0 | 518 | 68 |
| 590 | 4 | 0 | 519 | 131 |
| 590 | 4 | 0 | 520 | 143 |
| 590 | 4 | 0 | 521 | 133 |
| 590 | 4 | 0 | 529 | 141 |
| 590 | 4 | 0 | 535 | 4 |
| 590 | 4 | 0 | 536 | 157 |
| 590 | 4 | 0 | 537 | 19 |
| 590 | 4 | 0 | 539 | 136 |
| 590 | 4 | 0 | 541 | 184 |
| 590 | 4 | 0 | 543 | 5 |
| 590 | 4 | 0 | 544 | 249 |
| 590 | 4 | 0 | 545 | 4 |
| 590 | 4 | 0 | 553 | 110 |
| 590 | 4 | 0 | 554 | 214 |
| 590 | 4 | 0 | 555 | 112 |

Language                                                                           6/26/2019

| KeyId | SortSeq | Label | ExportId | LocaleId | CountMethodM |
|---|---|---|---|---|---|
| 0 | 0 | English/Spanish | | 1033 | 1 |
| 1 | 10 | English TS | | 1033 | 2 |
| 2 | 20 | Spanish TS | | 1034 | 2 |

EXHIBIT D

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF GEORGIA
ATLANTA DIVISION

DONNA CURLING, et al.,

      Plaintiffs,

v.

BRAD RAFFENSPERGER, et al.,

      Defendants.

Civil Action No.
1:17-cv-02989-AT

## **DECLARATION OF THOMAS W. RYAN**

Pursuant to 28 U.S.C. § 1746, I, Thomas W. Ryan, hereby declare as follows:

1. I have personal knowledge of the matters stated herein and would testify to the same if called as a witness in Court.

2. I am over the age of 21 and am otherwise competent to testify.

3. I have a Ph.D. in Electrical and Computer Engineering from the University of Arizona, awarded in 1980.

4. I was employed by Science Applications International Corporation (SAIC) from 1980 to 2007.  My work there involved digital image processing. I was an algorithm designer, senior scientist, and project manager.

1

5. I have over 25 years of professional experience in the design,

   development, integration, and delivery of software systems. Some of my

   work involved security clearances so I am familiar with the nature of files

   that should have restricted access and those that should be visible to the

   public and stakeholders.

6. I have worked on public oversight of elections and election integrity issues

   since early 2003 when I co-authored a report on the Pima County election

   system.

7. I am familiar with the federal Voting System Standards that include

   the design and testing requirements for systems certified in the state of

   Arizona.

8. In 2004 I started Arizona Citizens for Fair Elections to promote better

   election practices.

9. From 2008 to 2018, I served as a member of the Pima County Election

   Integrity Commission, including four years as Chair of the Commission.

10. In 2005 and 2006 I was involved in developing election audit legislation

   that requires a sample hand count as a check against our computerized

voting system which is primarily a hand marked paper ballot system. This legislation was enacted by the Arizona legislature.

11. Pima County used the Diebold/GEMS voting system for a number of years before modernizing the voting system in 2016 and switching to a different system. The primary voting method was hand marked paper ballots counted by the Accu-vote optical scanning equipment with Diebold DREs used in the polling place for accessibility options.

12. My focus on election auditing derives from the fact that computerized voting systems are not transparent -- it is difficult, if not impossible, to see how the systems are interpreting ballots and aggregating results. As with electronic financial transactions, it is important that election voting be transparent and subjected to auditing and public oversight to be sure the systems are working properly.

13. The Diebold/GEMS system is particularly vulnerable to malicious data manipulation because the election database can be edited with the aid of commonly available software. Editing the database in this way leaves no traces in the election system activity logs.

14. Detection of data manipulation would require analysis of the election database to look for inconsistencies. Standard reports generated by the

GEMS system would rarely detect such manipulation or configuration errors.

15. The election database contains information about all the contests appearing on the ballot as well as tables that show the choices made by voters on individual anonymous ballots, referred to as cast vote records.

16. There is no information in the database that reveals any voter's identity or personal information.

17. Under court order, the GEMS databases were available for public inspection in Pima County from 2008 until the system was replaced in 2016. During that time, I am aware of no problems arising from the availability of the databases.  Inspection of these databases showed that the reported election results were consistent with the data contained in the databases.

18. Minor irregularities were discovered in early available databases, including multiple uploads of precinct-tabulated ballot data, and cases where one or two individual ballots had been removed and later replaced. None of these irregularities affected reported election outcomes. No irregularities have been discovered in later databases.

19. Pima County replaced the Diebold/GEMS system in 2016 with a system from Election Systems and Software (ES&S). The databases from this

system are encrypted, but the Pima County Elections Department continues

to export the critical portions of the database, including the cast vote records,

for public inspection. No problems have results from the public availability

of this data.

I declare under penalty of perjury that the foregoing is true and correct.


Executed this 30th day of June, 2019, in Boulder, Colorado.

_____

Thomas W. Ryan

EXHIBIT

E

UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF GEORGIA
ATLANTA DIVISION

DONNA CURLING,      et al.,            )
    Plaintiffs,                        )
                       )          CIVIL ACTION FILE
v.                                     )
                       )          NO. 1:17-cv-02989-AT
BRAD RAFFENSPERGER, et al.,            )
    Defendants.                        )
_____

DEPOSITION OF
TERESA LYNN LEDFORD

June 24, 2019

APG USA, INC.
www.APGreporting.com
(770) 827-1223

UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF GEORGIA
ATLANTA DIVISION


DONNA CURLING, et al.,            )
                                  )
        Plaintiffs,               )
                                  )    CIVIL FILE ACTION
vs.                               )
                                  )    NO. 1:17-cv-02989-AT
                                  )
BRAD RAFFENSPERGER, et al.,       )
                                  )
        Defendants.               )
_____



DEPOSITION OF

TERESA LYNN LEDFORD

June 24, 2019

9:40 a.m.

Gwinnett Justice and Administration Center

75 Langley Drive

Lawrenceville, Georgia



Marsi Koehl, CCR-B-2424



APG USA, INC.
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Curling et al. v.        Deposition of
Raffensperger et al.   T. LYNN LEDFORD                 6/24/2019

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 1                    C O N T E N T S

 2                  E X A M I N A T I O N

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 9                  E X H I B I T S
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 1                       E X H I B I T S

 2  Plaintiff's
    Exhibit No.          Description                    Page
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 4  Exhibit 11           E-mail from Mr. Newby          137
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 5                       Re:  Attached Security
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    Exhibit 12           Declaration Under Penalty      163
 7                       of Perjury/Oatis

 8  Exhibit 13           Declaration Under Penalty      165
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    Exhibit 14           Declaration Under Penalty      165
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11  Exhibit 15           Election Results Report        167

12  Exhibit 16           Election Results Report        169

13  Exhibit 17           Gwinnett County Election       184
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14
    Exhibit 18           Official Election Bulletin     188
15                       January 30, 2019

16  Exhibit 19           Ballot Image Report            189

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18
    (Original exhibits attached to original transcript.)
19

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```
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```

APG USA INC.

Curling et al. v.          Deposition of
Raffensperger et al.    T. LYNN LEDFORD                 6/24/2019

```
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 7

 8   Also present:

 9        Marilyn Marks, Coalition for Good Governance

10

11

12

13

14

15

16

17        (Pursuant to OGCA 15-14-37 (a) and (b) a

18   written disclosure statement was submitted by the

19   court reporter and is attached hereto.)

20

21

22

23

24

25
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1              P R O C E E D I N G S

2          (Plaintiff's Exhibit 1 was marked for

3      identification.)

4                  TERESA LYNN LEDFORD,

5  having been first duly sworn, was examined and

6  testified as follows:

7                  EXAMINATION

8  BY MR. POWERS:

9      Q.  Good morning, Ms. Ledford.

10     A.  Good morning.

11     Q.  I introduced myself before.  My name is John

12 Powers and I'm an attorney with the Lawyers'

13 Committee for Civil Rights Under Law and one of the

14 counsels representing the plaintiffs in this case.

15         Could you please state and spell your full

16 name for the record.

17     A.  It's Teresa Lynn Ledford.  T-E-R-E-S-A.

18 L-Y-N-N.  L-E-D-F-O-R-D.

19     Q.  Thank you.

20         Ms. Ledford, have you ever been deposed

21 before?

22     A.  No.

23     Q.  Have you ever offered sworn testimony in any

24 other capacity?

25     A.  Yes.

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1          MR. STEPHENS:  As an affidavit.

2          THE WITNESS:  Yes.  Through the

3      affidavit process, yes.

4   BY MR. POWERS:

5      Q.  In probably several cases?

6      A.  Correct.

7      Q.  Probably too many to go through right now.

8      A.  Yeah, I couldn't tell you.

9      Q.  Since this is your first deposition, I'll go

10   through a few of the ground rules.

11          First, do you understand that you're

12   testifying under oath just the same as if you're in a

13   court of law?

14      A.  Yes.

15      Q.  If you don't understand one of my questions,

16   please let me know and I'll try to rephrase it so

17   that you can understand.  Is that okay?

18      A.  Yes.

19      Q.  And for the sake of the court reporter,

20   who's working hard today, if you could please wait

21   until I finish asking my question before you begin

22   answering it.

23      A.  Yes.

24      Q.  All right.  And, lastly, you should please

25   feel free to take a break at any time just so long

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 1  it's not while a question is pending.  Is that okay?
 2       A.  Yes.
 3       Q.  All right.  Do you have an official E-mail
 4  address?
 5       A.  Yes.  It's lynn.ledford@gwinnettcouty.com.
 6       Q.  Ms. Ledford, what did you do to prepare for
 7  your deposition today?
 8       A.  Gather the information requested in the
 9  subpoena.
10       Q.  Great.  And have you brought any of the
11  documents requested in plaintiff's subpoena with you
12  today?
13       A.  Yes.  I have.
14           (Plaintiff's Exhibit 2 was marked for
15       identification.)
16  BY MR. POWERS:
17       Q.  Before we go further, I'll go ahead and hand
18  you what I've marked for identification as
19  Plaintiff's Exhibit 2.
20           Ms. Ledford, is Plaintiff's Exhibit 2 the
21  subpoena that you were referring to from the
22  Coalition for Good Governance?
23       A.  Yes.
24       Q.  Ms. Ledford, what documents have you brought
25  with you today in response to plaintiff's subpoena,
```

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1  Plaintiff's Exhibit No. 2?

2       A.   This is the number of provisional ballots

3  partially counted, fully counted and rejected.

4           MR. POWERS:  And I'm going to go -- and

5       maybe we can go through them one at a time.

6           MR. STEPHENS:  In order, mm-hmm.

7           (Plaintiff's Exhibit 3 was marked for

8       identification.)

9  BY MR. POWERS:

10      Q.   So, Ms. Ledford, you handed what I've now

11 marked as Plaintiff's Exhibit 3.

12           And could you please tell me what

13 Plaintiff's Exhibit No. 3 is?

14      A.   It is the summary of provisional ballots.

15           MR. STEPHENS:  I believe that's in

16      response to No. 15.

17           MR. POWERS:  Great.

18           THE WITNESS:  This is comments from

19      voters regarding the voting equipment.

20           MR. POWERS:  Okay.  And I'm marking that

21      document as Plaintiff's Exhibit No. 4.

22           THE WITNESS:  Yes.

23           (Plaintiff's Exhibit 4 was marked for

24      identification.)

25           MR. STEPHENS:  Let's try to identify

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 1        which one of the items that is.
 2  BY MR. POWERS:
 3        Q.   Ms. Ledford, can you please identify which
 4  subpoena question this --
 5        A.   Number 11.
 6             MR. STEPHENS:  Eleven, okay?
 7  BY MR. POWERS:
 8        Q.   So Plaintiff's Exhibit No. 4 was produced in
 9  response to --
10        A.   -- No. 11.
11        Q.   -- request No. 11 of plaintiff's subpoena.
12  Thank you.
13        A.   This is the intergovernmental agreement
14  between Gwinnett County Board of Voter Registration
15  Elections and the cities for 2017 and 2019.  And that
16  is No. 16 on the subpoena.
17             (Plaintiff's Exhibit 5 was marked for
18        identification.)
19  BY MR. POWERS:
20        Q.   I'm going to go ahead and mark that for
21  identification Plaintiff's Exhibit No. 5.
22             Just to reiterate, Plaintiff's Exhibit No. 5
23  is in response to what request number from
24  plaintiff's subpoena?
25        A.   Sixteen.
```

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1          Q.   Thank you.

2          A.   I'm looking for the number on this one.

3               Okay.   This is No. 17.   This is

4    communications and documents regarding the procedure

5    for electronic transmission and receipt of

6    election-rated files.

7               MR. POWERS:   I'm going to go ahead and

8          mark this document as Plaintiff's Exhibit

9          No. 6.

10              (Plaintiff's Exhibit 6 was marked for

11         identification.)

12   BY MR. POWERS:

13         Q.   And just to reiterate, you said that is in

14   response to subpoena request No. 17?

15         A.   Correct.

16         Q.   What's next?

17         A.   This actually goes with that as well.   I'm

18   sorry.   There's three pages to that, three sets to

19   that one.

20         Q.   So let's add that into Plaintiff's Exhibit

21   No. 6.

22         A.   This is No. 8.   This is bulletins regarding

23   electronic updates about security on the GEMS

24   servers.

25              MR. POWERS:   I'm going to mark this

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1        document as Plaintiff's Exhibit No. 7.

2            (Plaintiff's Exhibit 7 was marked for

3        identification.)

4    BY MR. POWERS:

5        Q.  And just to reiterate, you said Plaintiff's

6    Exhibit No. 7 was produced in response to plaintiff's

7    subpoena request No. 8?

8        A.  Correct.  That's all I have.

9        Q.  Okay.  And I understand there are some

10   documents -- strike that.

11           Are there any documents that you have

12   identified that you are not producing today?

13       A.  Yes.

14       Q.  What documents are those?

15           MR. STEPHENS:  Let me -- let's just go

16       through this -- in fact, if we can go

17       through the request for production of

18       documents.

19           MR. POWERS:  Sure.

20           MR. TYSON:  That might work and then we

21       can state the objections and go from there.

22           MR. POWERS:  Okay.

23           MR. STEPHENS:  All right.  As to request

24       No. 1, I think the State had an objection to

25       that.

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 1          MR. TYSON:  Yes.  So the State

 2      defendants object to request No. 1 as

 3      outlined in our letter yesterday evening.

 4      The GEMS database is a state-owned system

 5      and it's protected from disclosure by state

 6      law and has already been the subject of some

 7      back and forth between parties regarding its

 8      disclosure.

 9          We'll been talking with Judge Totenberg

10      about that disclosure later in the week.

11      But it is our contention that this is

12      protected from disclosure by state law

13      because it could be used to inject malware

14      or other software into the system that

15      could affect -- adversely affect election

16      security.

17          So State defendants object to any

18      disclosure of the GEMS database under

19      request No. 1.

20          MR. STEPHENS:  And as to Ms. Ledford,

21      she also objects and shares in that -- joins

22      in that objection.

23          We also prior to the deposition today

24      handed you our written objection to Item

25      No. 1 as well as a few others.
```

1          Item 1 requests the GEMS database.  And

2      that -- once the election -- and it's the

3      database for the November 2018 election.

4          Once that election is completed, the

5      GEMS database is delivered to the clerk of

6      the superior court and it remains in the

7      clerk's possession for a couple of years

8      under seal and can only be released through

9      a court order.  It is then given to the

10     grand jury to take a look at it and maybe

11     it's disposed of it at that point.

12          It contains privileged and protected

13     information.  And production would have the

14     effect of rendering the State's electoral

15     system insecure and vulnerable to attack.

16     It would also jeopardize the security of our

17     present election system.

18          And we've given you citations to a case

19     in which this issue was discussed and a

20     citation to 21-2-500 on that point.

21          MR. POWERS:  Are there any other

22     objections you want to state for the

23     record or can we move on?

24          MR. STEPHENS:  Let's go through these.

25          Request No. 2, there are no documents

1        that Ms. Ledford has identified that are

2        responsive to this request.  We did oppose

3        the objection that is contained in the

4        letter, but there are no documents by the

5        same token.

6            No. 3, policies, procedures, manuals and

7        other documents relating to or describing

8        the assignment of unique identifiers to

9        electronic ballot image reports or cast vote

10       records.  There are no documents responsive

11       to that request.  As a matter of fact, I

12       understand that the Elections Division does

13       not do that.  Is that correct, Lynn?

14           THE WITNESS:  Correct.

15           MR. STEPHENS:  In paragraph four, it's

16       requesting policies, procedures, manuals

17       relating to or describing the method of

18       retrieval of electronic ballot information

19       from specific cast electronic ballots for

20       purposes of research or canceling the

21       ballots or votes.

22           There are no documents responsive to

23       that request.  And, again, my understanding

24       is that the Elections Division does not do

25       that.  Is that correct?

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1            THE WITNESS:  Correct.

2            MR. STEPHENS:  Okay.  Paragraph five,

3       you've asked for ballot image reports for

4       cast vote records of the first five ballots

5       cast and the last five ballots cast in the

6       November 6, 2018, election at Martins E

7       Precinct.

8            There are no documents that are

9       responsive to this request.  And I

10      understand that it would be impossible for

11      us to retrieve that.  Is that correct?

12           THE WITNESS:  That's correct.

13           MR. STEPHENS:  And would you describe

14      why that's not possible?

15           THE WITNESS:  Yes.  In order to keep the

16      anonymity of the voter and the integrity of

17      the system, once a ballot is cast, it then

18      becomes randomized throughout the unit, so

19      you couldn't take a numbered list of voters

20      and know that the first five people, this is

21      the first five ballots, so you would be able

22      to see how those voters cast their ballots.

23      So we don't have the option of getting this

24      information.

25           MR. STEPHENS:  Would the same hold true

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 1        of No. 6?

 2              THE WITNESS:  Correct.

 3              MR. STEPHENS:  It's just a different

 4        precinct.

 5              THE WITNESS:  Correct.

 6              MR. STEPHENS:  And we have objected to

 7        five and six as seen in the letter, but

 8        there are no documents responsive to that

 9        request.

10              Then let me make sure I'm going through

11        and checking these.

12              On 7, nondisclosure agreement signed by

13        the Gwinnett election officials related to

14        election data contained in the County's GEMS

15        database.  There are no documents responsive

16        to this one and I understand we don't have

17        any such agreements.  Is that correct?

18              THE WITNESS:  Correct.

19              MR. STEPHENS:  We've already talked

20        about eight and produced documents.

21              Let's see.  No. 9, instructions,

22        bulletins and electronic updates, receipt

23        from the Secretary of State's Office related

24        to security threats to the voting system or

25        election-related equipment since January 1st
```

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1    of 2016.

2         THE WITNESS:  We had those.

3         MR. STEPHENS:  Okay.  There's -- oh,

4    that's right.  That's --

5         MR. TYSON:  -- included in Exhibit 7, I

6    believe, updates regarding the DRE system

7    and regarding the voting system at large.

8         Does that sound right?

9         THE WITNESS:  Mm-hmm.

10        MR. STEPHENS:  I guess we have produced

11   those.  So we're on 10, I think, right now.

12        MR. POWERS:  Yeah.

13        MR. STEPHENS:  And that dealt with

14   documents related to preventing voters who

15   appear at the wrong polling place in some

16   elections from being located in an express

17   poll book and redirected by poll workers to

18   a second incorrect polling place.

19        There are no documents responsive to

20   this request and that's not a practice of

21   ours.  Is it?

22        THE WITNESS:  Correct.

23        MR. STEPHENS:  We've produced documents

24   responsive to 11.

25        Twelve involves investigations

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1          concerning the undervote in the lieutenant

2          governor's race in the November 2018

3          elections.  There were no documents

4          responsive to that request.  Is that right?

5               THE WITNESS:  Correct.

6               MR. STEPHENS:  And then I think we just

7          have 13 and 14 that we have not responded to

8          with documents.

9               Thirteen is complaints received from

10         voters, poll workers or Gwinnett County

11         staff regarding inaccuracies in voter

12         information in the electronic poll books

13         during the November elections.

14              Were there any documents responsive to

15         that?

16              THE WITNESS:  No.

17              MR. STEPHENS:  And the last one is the

18         one that we've also objected to, which is

19         the records concerning or related to changes

20         made to the voter registration information

21         or the electronic poll book information for

22         Gwinnett county voters Dana Bowers and

23         Jasmine Clark since January 1st, 2018.

24              Both the State and we have objected to

25         that and I'll let the State make its

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1     objection.

2          MR. TYSON:  And the objection there is

3     the records related to the voter

4     registration information from the ENet

5     database include nonpublic information that

6     is protected from disclosure about the

7     individual voters.

8          We have no objection to the production

9     pursuant to a protective order when one is

10    entered, but there has not yet been a

11    protective order entered in the case.

12         And so until such time as that

13    protective order is entered, the State would

14    object to disclosure of the audit records

15    and nonpublic information from the ENet

16    database regarding those voters.

17         MR. STEPHENS:  We concur in that

18    objection.

19         And I will say with regard to the

20    objection, in No. 1 dealing with the GEMS

21    database, that we will, of course, comply

22    with any court order that's entered.  That

23    information is by Georgia law stored

24    securely pending a court order.  And if a

25    court order is entered with protective

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1     provisions, then, of course, we'll comply

2     with that.

3          MR. POWERS:  Okay.

4          MR. STEPHENS:  And I believe that covers

5     all the request for production.

6          MR. POWERS:  I think -- what about 15,

7     16 and 17?

8          MR. STEPHENS:  Let's see.  I had that we

9     produced documents under 15, 16 and 17.

10         MR. POWERS:  Okay.  I have that for my

11    records.

12         Great.  We may return to this later.

13         MR. STEPHENS:  All right.

14  BY MR. POWERS:

15     Q.  For right now, let's move on.

16         Ms. Ledford, you were born in Gwinnett

17  County?

18     A.  Yes.

19     Q.  Are you a lifelong resident of Gwinnett

20  County?

21     A.  Yes.

22     Q.  And where in Gwinnett County do you live?

23     A.  Grayson.

24     Q.  Do you live in the incorporated part of

25  Grayson?

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1        A.   No.

2        Q.   Could you please tell me about your

3   professional employment history and background.

4        A.   Sure.  I started working for Gwinnett County

5   in October of 1987 as a temporary employee.  In

6   February of '88, I went to being a full-time

7   employee.

8             I started out as a clerk then graduated to

9   voter registration coordinator and then assistant

10  director and then director.

11       Q.   So you're currently the elections director

12  for Gwinnett County?

13       A.   Yes.

14       Q.   How long have you been elections director

15  for Gwinnett County?

16       A.   I believe since the end of 2001.

17       Q.   And before that, you were the assistant

18  elections director?

19       A.   Yes.

20       Q.   How long were you the assistant elections

21  director for?

22       A.   I don't remember.

23       Q.   What was your title before assistant

24  elections director?

25       A.   Voter registration coordinator.

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1      Q.   What responsibilities do you have as the

2  elections director for Gwinnett County?

3      A.   To ensure compliance with Title 21.

4      Q.   That's of the Georgia Election Code?

5      A.   Yes.  Official Code of Georgia Annotated.

6      Q.   What are your responsibilities that you take

7  on to make sure that that happens?

8      A.   Well, I make sure I understand the code and

9  state laws, rules and regulations in regard to all

10  voter registration and election processes.

11          So I have a staff and I oversee that staff

12  to ensure all of those things take place based on

13  deadlines, timelines and statutory requirements.

14      Q.   What kinds of duties do you take on on a

15  day-to-day level?

16      A.   That's hard to say.  It depends.  If we're

17  in an election cycle, the duties are obviously

18  different than in a nonelection cycle.

19          In an election cycle, we set up a calendar

20  for, again, deadlines for absentee balloting by mail,

21  advanced in-person voting, setting up our polling

22  locations, training, staffing, replacement of all the

23  training and staffing that we do.

24          We set up online and in-person training for

25  the poll officials.  In addition to that, we are the

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1  official recorder for campaign filings and

2  disclosures for candidates and campaigns.  We

3  maintain all that in our office as well.

4        And then, obviously, year round we do voter

5  registration and all the processes that go along with

6  that, including list maintenance, day-to-day --

7        (Reporter requests that witness slow

8     down.)

9        THE WITNESS:  Which includes list

10     maintenance, activities, updates, new

11     registrations both online and manual.

12  BY MR. POWERS:

13     Q.  Roughly, how many registered voters are

14  there in Gwinnett County?

15     A.  We have right at 600,000.  Approximately

16  550,000 active and then approximately forty to 50,000

17  inactive.

18     Q.  It takes a lot of organization to manage an

19  operation of this size?

20     A.  Yes.  It does.

21     Q.  What training or certifications have you

22  received related to election administration?

23     A.  The Georgia Association of Voters Registrars

24  and the Georgia Election Officials Association.

25        We have two separate associations in Georgia

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1 | and I go to those trainings any time they are held.

2 | I have also done any special trainings that were

3 | provided by the Secretary of State's Office over the

4 | years.

5 |     Q.   How frequently are those special trainings

6 | held?

7 |     A.   They are infrequent.

8 |     Q.   Has the Secretary held any special trainings

9 | related to the DRE voting machines?

10 |     A.   Not for me because I've been here -- been

11 | doing it for 30 something years.

12 |     Q.   Have you been an instructor in any of the

13 | trainings administered around the state?

14 |     A.   I have.

15 |     Q.   Could you please tell me about those?

16 |     A.   It varies.  It depends on what the

17 | association is concentrating on for that particular

18 | election.  We have done staffing and recruiting.  I

19 | have done voter registration practices and

20 | procedures.  We've also done some type -- so it's

21 | just over -- like I said, I've been in association

22 | for many, many years, so there's been a lot of

23 | trainings I've worked on.

24 |     Q.   That's fair enough.

25 |          Have you served in important roles in the

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1  election administration field at the statewide level

2  in Georgia?

3      A.   I have since Cathy Cox was the secretary of

4  state, I was appointed to several committees under

5  her.   The subsequent secretaries of states, I've been

6  appointed to several -- I couldn't tell you exactly

7  but to different committees.

8          And then the latest one I served on was

9  Governor Brian Kemp put together a blue ribbon

10 commission to study the Georgia Election Code.   And

11 there were several of us on that committee and that

12 was probably three or four years ago.

13     Q.   Was this the election code review committee?

14     A.   It was.

15     Q.   What did that committee look at?

16     A.   Everything from page 1 to the last page and

17 just -- again, just reviewed all of that.

18     Q.   Was the election code review committee

19 involved at all in the creation or review of House

20 Bill 316 that was passed in 2019?

21     A.   No.

22     Q.   Were you personally involved in the creation

23 or review of House Bill 316?

24     A.   No.

25     Q.   Ms. Ledford, were you -- have you served as

1   president of the Georgia Elections Officials

2   Association?

3        A.   Yes.

4        Q.   And, roughly, when did you serve in that

5   role?

6        A.   Maybe 10 years ago, roughly.  I don't

7   remember exactly but about eight to 10 years ago.

8        Q.   Have you served on the national task force

9   for poll worker and public education?

10        A.   I don't think so.

11        Q.   Have you served on committees with the Voter

12   Registrars Association of Georgia?

13        A.   Yes.

14        Q.   Could you tell me a little about that?

15        A.   No.  I don't remember.  There's a lot of

16   years so a lot of committees.

17        Q.   Fair enough.

18             Is it fair to say that through these various

19   roles, you're knowledgeable about the election

20   administration practices and procedures employed by

21   counties throughout Georgia?

22        A.   In Gwinnett County, Georgia.

23        Q.   Does that knowledge extend to the voting

24   methods and systems used in other counties in

25   Georgia?

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1      A.   I know how Gwinnett County conducts our

2   policies and procedures.  I don't want to speculate

3   how other counties would interpret and apply laws,

4   rules and regulations.

5      Q.   What has your role been with respect to

6   implementing and using the DRE voting machine system

7   that's used in Gwinnett County elections?

8      A.   Well, I was the assistant director when we

9   began using DREs in 2002.  So just being the

10  assistant, I worked on the distribution of the

11  equipment and how -- which precincts were going to

12  get how much equipment; looking at numbers of

13  registered voters.  And then I assisted in

14  implementing the L&A testing that we use.

15          Of course, all the instruction was provided

16  by the Secretary of State, so we just implemented

17  what was provided to us.

18     Q.   What was your role with respect to

19  implementing the logic and accuracy testing?

20     A.   Just making sure the paperwork was in order

21  and verifying it afterward.

22     Q.   We'll probably return to that subject later

23  on.

24          Who at the Gwinnett County Board of

25  Elections is responsible for ensuring that the DRE

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1   voting system used in the county is functioning

2   properly?

3          A.   The Elections Division and staff.

4          Q.   Which staff members specifically?

5          A.   Well, we have an election coordinator who

6   heads that up and then he has two election

7   associates, two that work under him and then we hire

8   approximately five to 15 to 20 depending on the type

9   of election, temporary employees.

10         Q.   What is the name of the election

11  coordinator?

12         A.   Kelvin Williams.

13         Q.   What are the names of the other two staff

14  members that you mentioned who do a lot of work on

15  this?

16         A.   Demond Smith and Tiffany Vang.

17         Q.   Thank you.

18              Ms. Ledford, what is the annual budget of

19  the Gwinnett County Board of Elections roughly

20  speaking?

21         A.   Again, it depends.  In an election year, it

22  can be five to ten million depending on the election

23  cycle that we're in.  In an off-election year, we

24  only have what we call an admin budget and that's

25  usually anywhere from 1.5 to three million.

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1       Q.   Let's talk about the Gwinnett County Board

2   of Elections' budget in an election year.

3            What are the major line items that take up

4   the bulk of the five- to ten-million-dollar budget

5   that you just referred to?

6       A.   Poll official payroll.

7       Q.   What else?

8       A.   Professional services.

9       Q.   What constitutes professional services?

10       A.   Temporary employees and translation.

11       Q.   You're talking about Spanish language

12   translation?

13       A.   Correct.

14       Q.   How much of that budget goes into DRE

15   machine testing and maintenance?

16       A.   I couldn't tell you exactly.

17       Q.   Is it hard work to do the DRE machine

18   testing and maintenance?

19       A.   It is.

20       Q.   Could you tell me about the pieces that go

21   into the DRE machine testing and maintenance?

22       A.   Sure.  It's a couple of tests.  We perform

23   what's called a diagnostic test, which means we

24   ensure that the touches on the machine match up what

25   they should.

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1          The second part of the testing is what we

2    call automatic L&A.  And you run a series of tests on

3    that and it produces a pattern.  And we verify that

4    that pattern is correct based on what we know it

5    should be for that election.  And that is all

6    documented.

7          Q.   So the Gwinnett County Board of Elections

8    has documents reflecting diagnostic tests and the

9    automatic logic and accuracy testing?

10         A.   Yes.

11         Q.   Are those tests run on every single

12   DRE machine that's used in early voting and

13   election day?

14         A.   Yes.

15         Q.   How many DRE machines does Gwinnett County

16   own?

17         A.   Roughly 1800.

18         Q.   How many of those are used in an even-year

19   election cycle?

20         A.   It just depends on what election cycle we're

21   in.  Obviously, the gubernatorial year doesn't

22   require as many as a presidential year and so we base

23   it on past history and anticipation.

24         Q.   Fair enough.  So say the November 2018

25   general election, roughly, how many voting machines

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1  did you use for that election?

2        A.   I don't know because I don't remember.

3        Q.   In a presidential election year, does the

4  County use all of its DRE voting machines?

5        A.   We do not.

6        Q.   Do you recall what the greatest number of

7  DRE machines the County has used in a particular

8  election?

9        A.   I do not.

10       Q.   How much does it cost to store the DRE

11  machines?

12       A.   Nothing.

13       Q.   The County doesn't pay for the storage of

14  the DRE machine?

15       A.   Huh-uh.

16       Q.   Who pays for that?

17       A.   They are stored onsite in a secure location.

18       Q.   On county property?

19       A.   Yes.

20       Q.   You might have mentioned this before.

21            When did Gwinnett County begin using the

22  current DRE voting system?

23       A.   2002.

24       Q.   What voting method was in place for in-vote

25  in-person -- sorry.

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1              What voting method was in place for

2    in-person voting on election day in Gwinnett County

3    before the current DRE system?

4         A.   The optical scan system.

5         Q.   Could you please describe that optical scan

6    system for me?

7         A.   It's the same system that we use today for

8    absentee and provisional balloting.  It's a bubble-in

9    system.  And the voter is provided their particular

10   ballot style.  They would have voted by bubbling it

11   in and then they would have put it into the scanner

12   prior to leaving the poll.

13        Q.   Hand-marked paper ballots?

14        A.   Yes.

15        Q.   How long was that optical scan hand-marked

16   paper ballot voting system used for?

17        A.   Two years.

18        Q.   What brand or manufacturer was used for the

19   optical scan system?

20        A.   At the time it was called GEMS, Global

21   Elections Management System.

22        Q.   Thank you.

23             And before that optical scan system, what

24   voting method did Gwinnett County use?

25        A.   Punch card.

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1      Q.   Could you describe the punch card voting

2    system?

3          A.   Really?

4               The voter would be provided their ballot.

5    If it was a primary, they would have to specify

6    Democrat or Republican because you had different

7    voting booths.

8               The voter would then be given a card and

9    they would slip it into a little unit.  And there was

10   a tiny punch.  And you had a booklet.  And the

11   numbers in that booklet coincided with the ballot and

12   so they would punch whichever number matched the

13   person that they wanted to vote for.

14               At the end, they would take it out and then

15   it would be placed into a ballot box -- a locked

16   ballot box.

17        Q.   Is that similar to -- were there chads or --

18        A.   Yes.   That's exactly what it was.   It was

19   that system.

20        Q.   Oh.  And how long was the punch card system

21   used for as best you know?

22        A.   From my knowledge, from 1973 until we

23   purchased the new system in 1999.

24        Q.   Do you recall receiving complaints from

25   voters about the punch card system?

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 1        A.  I don't remember.

 2        Q.  Fair enough.

 3             Let's go back and talk about the optical

 4   scan system a little more.

 5             You mentioned that it was in place for

 6   two years.  Which years was the optical scan system

 7   in place for?

 8        A.  2000 and 2001.

 9        Q.  So the optical scan system was in place for

10   the 2000 presidential election?

11        A.  Yes.

12        Q.  Do you recall if the optical scan system was

13   used only by Gwinnett County or if it was something

14   that other counties in Georgia were also doing?

15        A.  To my knowledge, there were only two

16   counties:  Gwinnett and Chatham.

17        Q.  Your role at the time was assistant

18   elections director?

19        A.  Correct.

20        Q.  What role did you play with respect to

21   implementing the optical scan system?

22        A.  I was partly involved with the decision on

23   the vendor.  We had several demonstrations.  Once it

24   was chosen, then I worked with the elections director

25   at the time and the staff to develop the training and
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1  L&A testing for that as well, again, which at that

2  time would have been provided by the vendor.

3      Q.   Can you describe the kind of logic and

4  accuracy testing that was used on the optical scan

5  testing?

6      A.   Very similar.  You do diagnostic testing

7  first to make sure the unit itself is operational,

8  reading the bubbles.

9         And then the second part was much more

10 difficult than the DRE system because you had to

11 develop a handwritten -- or hand-marked test deck.

12 And you had to create that certain pattern.  So we

13 had thousands and thousands of optical scan ballots

14 and based upon the style would have to be read into

15 those units.  And it took a significant amount of

16 time to create those test decks.

17     Q.   Understood.

18        When ballots were cast in person on election

19 day using the optical scan system, were the ballots

20 counted at each polling place or at the County Board

21 of Elections Office?

22     A.   They were tabulated onto the memory card in

23 each of the OS units and then that information was

24 brought back to the Elections Office for the official

25 certification.  So it was aggregated at the Elections

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1  Office.

2      Q.   Did you think that the county's processes

3  for counting the hand-marked paper ballots were

4  affected?

5      A.   "Counting" meaning for the poll officials or

6  for the main office?

7      Q.   Both.

8      A.   Well, it was difficult for the poll

9  officials because optical scan ballots carry a

10 different set of problems just like any set does.

11 And if you had a voter who overvoted a ballot or had

12 something wrong with it and the unit wouldn't take

13 it, that ballot would be spoiled.  The voter would be

14 given an addition ballot.  They would have to go

15 down --

16         (Reporter requests that witness slow

17      down.)

18         THE WITNESS:  The voter would be given

19      the option to take a second ballot or

20      continue to have that ballot spoiled and not

21      cast.  And we had that happen more

22      frequently than I think people realize

23      because they didn't want to go back and do

24      that.  And so it created, you know, a

25      significant issue with that.

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1           The machines themselves were not

2       problems.  As far as the tabulation, the

3       aggregation of the results, it was not an

4       issue.

5   BY MR. POWERS:

6       Q.   Mm-hmm.  Do you recall how many complaints

7   you -- strike that.

8           Do you recall receiving any complaints from

9   voters about having to cast the second paper ballot

10  or not having their paper ballots scanned properly?

11      A.   Yes.

12      Q.   How many complaints do you recall receiving?

13      A.   I don't.  It's been too long.  And like I

14  said, we only used it for two years.  It was

15  significant enough that it stuck in my mind is the

16  only way I know how to describe that.

17      Q.   Sure.  Do you have any -- strike that.

18          Did you have any concerns about the

19  integrity of the elections that were conducted in

20  Gwinnett County using the hand-marked paper ballots?

21      A.   I don't remember.

22      Q.   Sitting here today, do you have any concerns

23  about the integrity of the elections that were

24  conducted in Gwinnett County using hand-marked paper

25  ballots?

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1      A.   No.

2      Q.   Do you recall experiencing any problems with

3   the optical scanning system besides those that you

4   just described?

5      A.   Yes.   Occasionally -- the unit itself has

6   the memory card and memory card has a battery in it.

7   And, obviously, you don't always know the battery

8   life.   You buy them off the shelf and you think they

9   are brand-new, but, perhaps, they are older.

10          So oftentimes the battery would die in a

11   memory card.   And, of course, the poll officials had

12   back-up memory cards, but that would stop voting.

13   And there was a process that they had to go through

14   to remove the dead memory card and insert the new

15   one.

16          And then that translated also as well to the

17   aggregation of the results on election nights; we

18   would be doing -- trying to download results and we

19   wouldn't be able to because the battery would die.

20   So we would have to take that memory card, change out

21   the battery and get the elections results.

22      Q.   Could you explain to me -- I admit I don't

23   know all the technology.

24          Could you please explain the difference to

25   me between memory cards that are used for the optical

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1  scan system and the memory cards that are used for

2  the current DRE voting system?

3       A.   I can't give you the technical.  I can give

4  you the user end.  They are very, very similar.  They

5  are both used to get the election -- the votes cast.

6            Both optical scan and DRE units have

7  redundant memory where votes casts are stored so that

8  if you absolutely get the information from the card,

9  you can get it from the unit.

10      Q.   Any other differences?

11      A.   Again, I'm not a techie, so I can only give

12  you the user end of it.

13      Q.   To the best of your knowledge, were there

14  any differences?

15      A.   No.

16      Q.   The battery problem that you described with

17  respect to the optical scan system, wouldn't that

18  also apply to the current DRE voting system memory

19  cards?

20      A.   It does not seem to.  And I believe that is

21  due to the fact that those units are charged every

22  three months.  And so even if the battery -- if

23  something happened in the memory card, the battery in

24  the unit will hold for four hours.

25      Q.   Could you charge the batteries for the

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1  optical scan system?

2       A.  No.  Because that battery is totally

3  contained within the little memory -- it's a watch

4  battery.

5       Q.  I just learned something.

6            Going back to my earlier question.  Do you

7  recall there being any other complaints from voters

8  about the optical scan system used in 2000 and 2001?

9       A.  The only other one was the amount of time it

10  took to do a recount because you have to handfeed all

11  of that information again.  You don't upload the

12  card.

13       Q.  Did you conduct any recounts in 2000 or 2001

14  while the optical scan system was in place?

15       A.  We did and it was a statewide.  I don't

16  remember the race, but it was a statewide race and it

17  was thousands and thousands of ballots.

18       Q.  Mm-hmm.  Do you recall roughly how long the

19  recount took?

20       A.  I believe it was a day and-a-half and that

21  was a solid eight hours with several units.  I don't

22  remember the number.  Several units being utilized

23  and the staff rotating, you know, because you

24  couldn't -- you had to stand to do it and we couldn't

25  stand for that amount of time.  Like I said, it was

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1  significant.

2       Q.   Got it.  And so just to make sure I

3  understand it correctly, it took a day and-a-half to

4  feed all of the hand-marked paper ballots cast in

5  Gwinnett County for that statewide election through

6  the optical scanners?

7       A.   Correct.

8       Q.   Thank you.

9            Any other complaints?

10      A.   Not to my knowledge.

11      Q.   Switching gears for a second, Ms. Ledford,

12  would you please describe for me Gwinnett's election

13  calendar for 2019?

14      A.   Our election -- well, we had a special

15  transportation referendum in March.

16      Q.   Is Gwinnett County conducting any other

17  elections in 2019?

18      A.   No.

19      Q.   What is Gwinnett County's election calendar

20  for 2020?

21      A.   Full.  We have the presidential preference

22  primary, the general primary, a potential general

23  primary runoff, a potential federal primary runoff,

24  the general election, the general election runoff and

25  then a potential federal election runoff.

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1            So that's, what, six, eight potential

2    elections.  So it's from -- we already start

3    preparing this year for next year.

4        Q.   Understood.  What kinds of preparations are

5    you making this year for next year's election?

6        A.   Well, currently, we're in the process of

7    looking at our training, not necessarily the

8    equipment specific because we don't know what that is

9    but procedures around the poll officials' processes

10   for proof of U.S. citizenship, voter registration

11   reconciliation problems, what to do in emergency

12   situations.  At this point that's really all that

13   we've tagged onto for that.

14       Q.   I'd like to turn back briefly to Plaintiff's

15   Exhibit 5, which -- which we talked -- we marked

16   before.  And since there's one copy, let's -- this

17   will be a little tricky.

18            But could you describe to me the -- what

19   Plaintiff's Exhibit 5 is and, perhaps, we can go from

20   there.

21       A.   Sure.  These are the intergovernmental

22   agreements for the loan of the election equipment to

23   the cities in Gwinnett County.

24       Q.   Mm-hmm.  Which cities were these agreements

25   signed with?

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1    A.  Duluth.  Lawrenceville.  Lilburn.  Norcross.

2  Peachtree Corners.  Snellville.  Sugar Hill.  And

3  that's for 2017 and 2019 respectively.

4    Q.  Would you mind describing the content of the

5  contracts in a little more detail?

6    A.  It's basically just saying that we will not

7  conduct your election, but we will allow you the loan

8  of the equipment to conduct your elections.  And then

9  we provide whatever number pieces of equipment that

10 they're requesting.

11   Q.  Is the number of machines requested part of

12 that agreement?

13   A.  It is.  I don't -- yes, it is.

14   Q.  And so --

15   A.  It's actually -- no.  There's another sheet

16 that they send in that we don't actually put with the

17 contract.  So we'll have to get that.

18        So that tells us how many voting machines

19 they want, how many optical scan units and the

20 peripherals that go with them.

21   Q.  Do you know sitting here now the number of

22 machines that --

23   A.  It's usually less than 10.

24   Q.  Is it roughly less than 10 per city?

25   A.  Correct.

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1      Q.  Are each of the cities with whom there's an

2   intergovernmental agreement conducting a municipal

3   election in 2019?

4      A.   Not necessarily.  They go ahead and submit

5   the IGAs because of the process they have go through

6   with their city councils and with our Elections Board

7   so that we have them in place.  If they do let us

8   know they're having an election, then we can set

9   aside the equipment that they've requested.

10      Q.   How does the process work logistically in

11   terms of the Gwinnett County BOE transferring custody

12   to the cities?  How does that work?

13      A.   Once we know they are having an election,

14   again, we set aside the number that they want.  And

15   then if they tell us they are having an election,

16   they tell us what date they need it and then they

17   come and pick up their equipment.  And then they set

18   it up, take custody and then they bring it back to us

19   after the election.

20      Q.   What training do you provide, if any,

21   related to the use of the DRE voting machines?

22      A.   We do not.

23      Q.   You don't provide any training --

24      A.   We do not, huh-uh.

25      Q.   What -- strike that.

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1          What are the security controls that

2    municipalities have to follow with respect to their

3    use of the DRE voting machines?

4          A.   I don't know.   I would assume it's the same

5    as ours.   And I'm not supposed to say "assume."   But

6    we don't train them, so we don't know.   Their

7    information comes from the Secretary of State's

8    Office, but I'm sure they are very well aware they

9    are supposed to keep everything sealed.

10          Q.   Could you describe what you mean with

11    respect to keeping the DRE machines sealed?

12          A.   Well, once they are -- you unseal them at

13    the beginning of the day and then you reseal them at

14    the end of the day with a numbered seal and there's

15    various numbered seals.

16          Q.   Does the -- strike that.

17          Do the cities provide documentation with

18    respect to the seals when they return the DRE

19    machines to you?

20          A.   I don't know.

21          Q.   Do you know if the Gwinnett County BORE has

22    any records of sealed information provided by the

23    municipalities?

24          A.   I don't know.

25          Q.   How are the DRE machines -- strike that.

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1           Who does the programming for the DRE

2   machines in municipal elections?

3        A.   I don't know.

4        Q.   Is it fair to say the Gwinnett County Board

5   of Elections does not do the programming for the --

6        A.   Correct.

7        Q.   Sorry.  Let me finish my question.

8        A.   Oh.

9        Q.   Is it fair to say that the Gwinnett County

10  Board of Elections does not do the testing for DRE

11  machines for municipal elections?

12       A.   Correct.

13       Q.   Thank you.

14           Do you know if municipalities have GEMS

15  licenses?

16       A.   I do not.

17       Q.   Does the Gwinnett County Board of Elections

18  provide any kind of guidance or share any information

19  with municipalities related to the use of DRE voting

20  machines?

21       A.   We do not.

22       Q.   Let's switch gears for a second and talk

23  about last second changes that the board of elections

24  might have to make before an election.

25           Can you recall any instances in which

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1   Gwinnett County officials had to make last second

2   changes or adjustments to plans for conducting

3   elections?

4        A.   Yes.

5        Q.   Could you please describe those situations?

6        A.   I don't remember.  I just remember it caused

7   mass confusion.

8        Q.   Fair enough.

9             So let's take the 2018 election, for

10  example.

11            Did the Gwinnett County Board of Elections

12  have to change procedures for processing voters whose

13  registration was placed in pending status?

14       A.   I don't remember.

15       Q.   Did the board of elections in 2018 have to

16  make adjustments to procedures for processing

17  absentee ballots?

18       A.   Yes.

19            MS. MARKS:  Let's take a break...

20            MR. POWERS:  That's fair.  You want to

21       take a five-minute break and see if we can

22       do something with the thermostat?

23            MR. STEPHENS:  All right.

24            MR. POWERS:  Go off the record.

25            (Recess from 10:45 a.m. to 10:58 a.m.)

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1  BY MR. POWERS:

2      Q.   So before we move on, perhaps, do a little

3  bit of clean up on some questions that I posed to you

4  before the break.

5          Before the break you spoke about moving from

6  the punch card voting system to the optical scan

7  system in 2000.

8          I wanted to ask what general response you

9  received from voters upon the change from the punch

10  card voting system to the optical scan system?

11      A.   Initially it was confusion.  Anytime you

12  have a change, you have to do public education and

13  voter education.  So they were confused to begin

14  with.

15          But the problem we had with that we still

16  continue to have today.  When you have a general

17  election, you have a write-in candidate.  Say you

18  have voters that want to bubble in Mickey Mouse and

19  then come in and bubble in the write-in space for

20  Mickey Mouse and then write Mickey Mouse's name on

21  it.  That is just a continuing problem with that type

22  of ballot.

23          But, again, initially, it was just

24  confusion.  And then about the time, you know, we

25  used it for the last election, they were used to it

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1  and then we changed them over.

2      Q.   When you say "they were used to it," what do

3  you mean by that?

4      A.   We just didn't get as many complaints as we

5  did the first election that we used it for because

6  they had gotten used to -- you know, they knew to

7  bubble in and put it in the scanner and what they

8  were looking for.

9      Q.   From an election administration's

10 standpoint, was the optical scan system an

11 improvement over the punch card system that had been

12 employed before?

13     A.   I don't know that it was an improvement.  It

14 was just a change.  You know, of course, with what

15 happened in 2000, we were glad we weren't on punch

16 card.  I don't necessarily think it was an

17 improvement.  I don't necessarily think it was not an

18 improvement.  It was just a change.

19     Q.   You had mentioned the write-in issue on the

20 optical scan system.  Isn't it true that there's --

21 you can still write in candidates on the current

22 voting system?

23     A.   Yes.  On the DRE and the optical scan but

24 the DRE won't let you cast an overvote.  That's the

25 difference.

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1        Q.   I wanted to talk about the spoiling issue

2   that you had mentioned earlier.   You had mentioned

3   overvotes.

4           Could you explain to difference between when

5   a voter casts an overvote and other situations in

6   which casting a vote by paper ballot can result in a

7   particular vote getting caught up for some reason?

8        A.   Sure.   Again, first, there is the overvote

9   and that's when someone votes for more than the

10  number of candidates allowed in a particular race.

11  So if you're only allowed to vote one and you vote

12  two, then it kicks that out.   That's considered an

13  overvote.

14          If a voter happens to make a stray mark in

15  the timing marks around the ballot, sometimes that

16  will kick it out.   If the ballot isn't printed

17  exactly correctly, if it's just a millisecond

18  issue -- I don't know.   I'm not a tech person.   But

19  if it's the least bit off, it will not accept the

20  ballot, which would be a broader problem with more

21  ballots, but you can see that as well.

22          If for some reason a ballot was damaged,

23  perhaps, if an absentee ballot, at someone's home

24  they spill coffee or tea on it or if they used

25  Wite-Out ®, the liquid Wite-Out ®, it considers it an

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1   overvote because it reads the metal in the Wite-Out

2   ®.

3           So that's the main things that I remember

4   that we encountered and that we still encounter today

5   with the absentee ballots by mail.

6       Q.   When there's an overvote in a particular

7   race and it's -- the optical scanner kicks it out, I

8   believe you said, does the -- do the votes for the

9   rest of the races on that same ballot count?

10      A.   It would now only by absentee by mail, but

11  in the polls it would not because the machines are

12  programmed to kick those out.  And so the voter would

13  either have to -- like it'd spoil that ballot and

14  lose their vote or get a second ballot and revote and

15  insert it into the machine.

16      Q.   What about in cases of -- strike that.

17           What about provisional ballots?

18      A.   Well, there wouldn't be overvotes on

19  provisional ballots because those are duplicated by

20  staff.  Ninety-eight percent of our ballots are

21  duplicated.

22      Q.   Could you briefly explain what the

23  certification process is after an election passes

24  and -- I'll start there.

25           Could you explain the certification process

1  after an election passes?

2      A.   Yes.   Once we've received all of the memory

3  cards from the polling locations on election night,

4  all that is aggregated into the GEMS server.   We then

5  add in the absentee ballots by mail figures and then

6  the provisional ballots are scanned and they're added

7  in there as well.

8          And once everything has been aggregated into

9  that system, it produces a report and that report is

10  used to certify the election.

11      Q.   When you're certifying an election, what is

12  it that you're certifying to?

13      A.   That the vote totals from those cards is

14  what was produced on that report.

15      Q.   Did you certify the results of all elections

16  conducted while the optical scan system was in place

17  in 2000 and 2001?

18      A.   Yes.

19      Q.   Earlier you mentioned an issue on -- that

20  had occurred with some of the batteries dying?

21      A.   Mm-hmm.

22      Q.   I wanted to ask about the batteries that are

23  employed on the optical scanners that are used today

24  to process both absentee and provisional ballots.

25          Do the batteries on those optical scanners

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1  used today for absentee and provisional ballots have

2  the same problem of dying?

3      A.   Not on the scale that it did when we had it

4  deployed countywide.

5      Q.   What scale does it happen on today?

6      A.   Maybe one of every third election.  And the

7  reason for that is we change those batteries when

8  we're doing L&A testing.

9      Q.   What is it that happens one in every three

10 elections with respect to the batteries in the

11 optical scanners?

12     A.   The optical scan unit just doesn't accept

13 the ballot.  It just -- it just stops.  It's like

14 "I'm done; I'm not doing anything else."

15     Q.   Is that on one machine?

16     A.   Yes.

17     Q.   So in one out of every three elections one

18 battery on one optical scan machine dies; is that

19 fair?

20     A.   Right.

21     Q.   Let's talk briefly again about municipal

22 elections to the extent that you know, of course.

23          Duluth -- is it fair to say that Duluth,

24 Lawrenceville, Lilburn, Norcross and Peachtree

25 Corners conduct their own municipal elections using

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 1 | DRE voting machines?

 2 |       A.   Correct.

 3 |       Q.   Are there any other municipalities in

 4 | Lawrenceville that conduct elections that you're

 5 | aware of?

 6 |       A.   You mean in Gwinnett?

 7 |       Q.   Sorry.  Strike that.

 8 |            Are there any other municipalities in

 9 | Gwinnett County that conduct their own elections that

10 | you're aware of?

11 |       A.   Every city within Gwinnett County with the

12 | exception of Braselton conducts their own elections.

13 | We do not conduct any city elections.

14 |       Q.   Are there any municipalities in Gwinnett

15 | County that conduct elections using hand-marked paper

16 | ballots?

17 |       A.   I do not know.

18 |       Q.   Do you know what the City of Snellville does

19 | with respect to the conduct of its municipal

20 | elections and its voting method?

21 |       A.   I do not.

22 |       Q.   Do you know who the points of contact are

23 | with the cities that do conduct their elections using

24 | the DRE voting machines?

25 |       A.   It's the city clerks, whomever that is at

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1  the time.

2      Q.  And that's who the Gwinnett County Board of

3  Elections negotiates the intergovernmental agreement

4  with?

5      A.  It's not really a negotiation, but that is

6  the point of contact between our office and the city

7  councils.  Yes.

8      Q.  Thank you.

9          In Duluth, Lawrenceville, Lilburn, Norcross

10  and Peachtree Corners, do you have any knowledge

11  about the number of polling places that those cities

12  employ?

13     A.  One.

14     Q.  Do each of those -- strike that.

15         Is it correct that Duluth, Lawrenceville,

16  Lilburn, Norcross and Peachtree Corners all hold

17  at-large elections?

18     A.  No.  Peachtree Corners has a mayor and three

19  at-large positions and then they have three that are

20  post-district wards.  I'm not sure what they call

21  them.

22     Q.  Thank you.

23         To make sure I got this right then, so

24  Duluth, Lawrenceville, Lilburn and Norcross hold

25  at-large elections?

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1        A.   Correct.

2        Q.   Duluth, Lawrenceville, Lilburn and Norcross,

3   they each have one ballot stop?

4        A.   I do not know.

5        Q.   Do the municipalities have early voting for

6   their elections?

7        A.   Yes.

8        Q.   How long is that early voting period for?

9        A.   I don't know.

10        Q.   Have you run any elections in which

11   municipalities are also holding elections or contests

12   on the same day?

13        A.   We had county elections with city elections

14   on the same day?

15        Q.   Yes.

16        A.   Yes.

17        Q.   Tell me about how that works in terms of the

18   logistics of getting the ballot and ensuring that

19   those municipal elections are also on the county

20   ballot?

21        A.   They are not on the county ballot.  We don't

22   conduct city elections, whatsoever.  So on those

23   days, voters have two polling locations.  They have

24   their county polling location and they have their

25   city polling location.  And they have to go to each

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1  one respectively.

2       Q.   In those situations where you have a

3  separate municipal and county election on the same

4  day, for Duluth, Lawrenceville, Lilburn and Norcross,

5  is the County Board of Elections still providing DRE

6  machines to the municipalities?

7       A.   It depends on the size of the election.  If

8  the election is very large and we have to deploy a

9  lot of our equipment, then we do not.  If it's a

10 smaller election, for instance, a special election,

11 then we would allow them the use of the equipment.

12 And if not, I do not know what they do.

13      Q.   You anticipated my next question.

14      A.   Yeah.

15      Q.   So is it fair to say that in situations

16 where you -- say, the Gwinnett County Board of

17 Elections has a major election and can't provide

18 voting machines to the municipalities, do you have

19 any knowledge of what the municipalities do in terms

20 of their method of election?

21      A.   I do not.  And it's very rare that we have

22 so many cities that we can't provide equipment to

23 them.  So I really don't know.

24      Q.   Do you recall any specific elections in

25 which municipalities requested voting machines and

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1  the Board of Elections was not able to provide them?

2       A.  No.

3       Q.  When the municipalities conduct early

4  voting, is it the case that each municipality has its

5  own separate early voting location?

6       A.  I do not know.

7       Q.  Do you know if municipalities hire temporary

8  workers who assist with conducting municipal

9  elections?

10      A.  I do not.

11      Q.  Let's consider the situation where you're

12 about to conduct an election.

13           Can you please walk me through the steps of

14 how you get the machines ready from the very

15 beginning of getting them out of storage to the end?

16      A.  Well, actually, they are not in storage;

17 they are onsite.  But we determine the number that

18 we're going to deploy per precinct.  Again, that's

19 based on numbers and past voting history for the

20 precinct.

21           We pull out ever how many of numbers that is

22 per precinct.  We tag them with that polling

23 location, that precinct number and name.  And then

24 they are tested based on the day they are going to be

25 delivered.

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1           We have 11 delivery trucks that deliver for

2    three or four days.  And so the precincts are tested

3    by what day their election equipment is going to go

4    out because that helps our rollout.

5           And they go through the process as we

6    discussed, the diagnostics testing, the automatic L&A

7    and in addition to that the -- what we call VWD,

8    which is the sight and hearing keypad.  We test to

9    make sure that's correct.

10          In Gwinnett County we have to do a second

11   check because we have our Spanish language that has

12   to be checked as well.

13          Once everything is checked, if everything

14   checks off okay, then that unit is closed and sealed

15   and it gets put on a cart with whatever its truck

16   number is.

17          Then those are delivered to polls prior to

18   election day, then they are unsealed and they use

19   them.

20       Q.  That's a lot.

21       A.  It is.

22       Q.  So, perhaps, we should back up for a second.

23          Let's take just the designing of the ballot

24   piece.  Can you take me through the process by which

25   the ballot is essentially designed and then loaded

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1  onto the DRE machines?

2       A.   Well, the ballot itself is designed by the

3  State.  The information that we provide is anything

4  local, which would be our local candidates, and any

5  questions that we may have.

6            Once that is completed -- again, we're

7  unique.  So the State sends it back to us.  We have

8  to send it out for translation.  Once all that takes

9  place, then we go through and we do what we call

10 "proof the ballots."  We ensure that the correct

11 ballot styles are appearing at the correct precinct

12 with the precinct number.

13      Q.   You mentioned that the ballot was -- is

14 designed by the State?

15      A.   Correct.

16      Q.   How is the ballot actually transmitted from

17 the State to you?

18      A.   They put it onto -- I'm not going -- they

19 put it onto something electronic.  I'm not sure.  And

20 it's sealed at the State.

21           We have to go down and physically sign for

22 that file.  Again, it's in a sealed bag and we bring

23 it back to our office.

24      Q.   Has that always been the system since the

25 DRE voting system has been in place?

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1       A.   No.   Prior to that, I believe, it was

2   electronic transmission.

3       Q.   Mm-hmm.   And let's talk about that.

4            First, when was the switch made from the

5   electronic transmission to the current system of

6   physically going and picking it up?

7       A.   I don't remember.

8       Q.   Five years ago?

9       A.   It's been within the last five years.

10      Q.   That's helpful.

11           Please describe to me what the -- how the

12  electronic transmission of the ballot was completed.

13      A.   Before the switch or...

14      Q.   Before the switch, yes.   Thank you.

15      A.   It was put onto a CD and we would go and

16  pick it up and bring it back to the office.   So it

17  wasn't a sealed bag like it is now.

18      Q.   Mm-hmm.   And after the election is over,

19  what would you do with that CD?

20      A.   With the ballot layout on it?

21      Q.   Yes.

22      A.   I don't remember.

23      Q.   Okay.   Now, let's shift from the ballot

24  design to the electronic poll books.

25           How long have electronic poll books been

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1  used in Gwinnett County?

2      A.  Since 2002.

3      Q.  How would -- strike that.

4          What's the process by which the information

5  would get loaded onto the electronic poll books?

6      A.  How would it get loaded into the electronic

7  poll books?  We would receive a file from the State.

8  And then we put it onto a memory card.  And then we

9  insert the memory card into the express poll unit.

10      Q.  How do you currently receive -- well, strike

11  that.

12          First, what's the file that you receive from

13  the State?

14      A.  It's called the -- it's just called the

15  "voter file," yeah.  Bulk update file.

16      Q.  Got it.

17          And how would -- now under the current

18  system, how do you currently receive the bulk update

19  from the Secretary's office?

20      A.  I don't know because it has changed as well

21  and I don't know how we get it now.

22      Q.  Do you recall how the Secretary transmitted

23  the bulk update before the current system?

24      A.  I believe it was a secured FTP site.

25      Q.  Could you please tell me more about how the

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1  bulk update was transmitted through the secured FTP

2  site?

3      A.   No because I wasn't involved in that

4  process.

5      Q.   Who was involved in that process?

6      A.   Multiple staff members.

7      Q.   Do you recall any of their names?

8      A.   The same three I gave you earlier are the

9  main three.

10      Q.   Just to make sure I understand it at sort of

11  the broadest level, tell me if I have this right.

12           So essentially the Secretary -- is it fair

13  to say the Secretary of State -- wait, it wouldn't be

14  the Secretary of State's Office necessarily.  I might

15  be wrong about that.

16           When the Kennesaw CES was in place, were you

17  receiving the bulk update from the Kennesaw Center

18  for --

19      A.   -- Election Systems.

20      Q.   Thank you.  When the Kennesaw Center for

21  Election Systems was in place, were you receiving the

22  bulk update from the Kennesaw Center for Elections

23  Systems?

24      A.   I believe that's correct.

25      Q.   Is it fair to say that the Kennesaw Center

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1  for Election Systems would post the bulk update on a

2  secure FTP site and then someone with the Gwinnett

3  County Board of Elections would download the bulk

4  update from the FTP site?

5       A.  Yeah.

6          MR. TYSON:  Uh... okay.  Fine.  You

7       already answered.  That's fine.

8  BY MR. POWERS:

9       Q.  Do you recall how long that process was in

10  place for?

11       A.  I do not.

12          (Plaintiff's Exhibit 8 was marked for

13       identification.)

14          MR. POWERS:  I'm going to hand you what

15       I'm marked for identification as Plaintiff's

16       Exhibit 8.

17          Copies for everyone.  There's three

18       here.

19  BY MR. POWERS:

20       Q.  Have you had a chance to look it over?

21       A.  Mm-hmm.

22       Q.  Ms. Ledford, what is Plaintiff's Exhibit 8?

23       A.  It looks like something from Kennesaw State

24  or someone saying how the voter files are put out

25  there -- or the -- yeah -- oh, I'm sorry -- ballot

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1  file for ballot proofing, yeah.

2      Q.   You mentioned ballot proofing.  Again, help

3  me understand.  Does that -- so talking about

4  Plaintiff's Exhibit 8, are the contents of the files

5  described in Plaintiff's Exhibit 8 relevant to the

6  formatting of the ballot, the bulk update for the

7  electronic poll books or both?

8          MR. TYSON:  I'm going to object that we

9      lack foundation for where we are.  Has she

10     seen this document before?  Has she relied

11     on this document.  If we can lay some

12     foundation before we get into that.

13         MR. POWERS:  Sure.

14 BY MR. POWERS:

15     Q.   Yeah.  So Ms. Ledford, have you seen

16 Plaintiff's Exhibit 8 before?

17     A.   No.

18     Q.   Have you seen documents similar to

19 Plaintiff's Exhibit 8 before?

20     A.   No.

21     Q.   Who from the Gwinnett County Board of

22 Elections would have been receiving these kinds of

23 files from the Secretary?

24     A.   Kelvin Williams and Kristi Royston.

25     Q.   Got it.  So if communications were coming

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1  from the Secretary or from the Kennesaw Center for

2  Elections Services, they probably would have been

3  going to Kelvin or -- Kelvin Williams or Kristi

4  Royston?

5       A.   Well, they would not have been going to

6  them.   They would have been made aware that they were

7  out there and available for them to retrieve.

8       Q.   Are you familiar with the types of files

9  that are listed in Plaintiff's Exhibit 8?

10      A.   I know what they are talking about.  I've

11 never actually seen them.

12      Q.   Let's talk about -- let's turn to the second

13 page.

14           In particular, let's talk about the third

15 item listed here which I will call Cherokee County,

16 slash, express poll, slash, ED file, slash November

17 2016 general election dot zip.   Do you see that?

18      A.   Mm-hmm.

19      Q.   Do you see where it says that this is not a

20 file posted for each county?   This file is only

21 posted to those counties who produce the storage

22 media into the jurisdiction's express polls

23 themselves.   Counties that do this operation are

24 Fulton, Cobb, DeKalb, Gwinnett, Forsyth, Chatham,

25 Henry, Columbia, Clayton and Cherokee.

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```
 1            Do you see that?
 2       A.   Yes.
 3       Q.   Would you mind explaining to me in layman's
 4  terms what this -- what this is in terms of producing
 5  the storage media and loading it into the express
 6  polls?
 7       A.   No --
 8            MR. TYSON:  Object again on foundation.
 9            I don't think we've established that she
10            knows what this process is referring to
11            before you get into details of it.
12            MR. POWERS:  Yeah, no, that's fair.
13            Perhaps, we should go through some of these
14            and talk about them individually.
15  BY MR. POWERS:
16       Q.   Let's start with -- on the first page, the
17  very first one, Appling County, slash, proof, slash,
18  audio, slash, Appling audio.
19            Is that a file that Gwinnett County uses?
20       A.   Yes.
21       Q.   What is that file?
22       A.   It is the file that is used for the --
23  what's called the VWD, which is voters with
24  disability.  This is the ballot that has been
25  recorded for use with that piece of equipment.
```

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1     Q.   That's something that Gwinnett County uses?

2     A.   Yes.

3     Q.   Let's move down one.

4          Do you see where Plaintiff's Exhibit 8 lists

5   the file Appling County, slash, proof, slash, ballot,

6   slash, 01, dash, Appling dot zip?

7     A.   Yes.

8     Q.   What is that file?

9     A.   That's the ballot proofing file.

10    Q.   Again, would you mind explaining in layman's

11  terms what the ballot proof is?

12    A.   Yes.  We actually print out every possible

13  ballot style within Gwinnett County and we ensure

14  that everything on that ballot is correct; that the

15  districts are correct, that the spelling is correct,

16  the titles are correct and the instructions for the

17  voter -- vote for one, vote for two -- we ensure all

18  that information is accurate.

19    Q.   Is that proof -- strike that.

20         Is that ballot proof just for paper ballots

21  or for the DRE machines as well?

22    A.   I don't know.  I can't remember.

23    Q.   Is that ballot proof for the DRE voting

24  machines?

25    A.   I don't know.

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1      Q.   Turning back to the Appling County proof

2   ballot 01 Appling dot zip file, is that a file that

3   the Gwinnett County Board of Elections uses?

4      A.   Yes.

5      Q.   Let's skip down a little bit to the third

6   one from the bottom.  So we're skipping one.  The

7   file that says, Appling County, slash, express poll,

8   slash number list 001, in parenthesis 11-08-2016 dot

9   PDF?

10      A.   Mm-hmm.

11      Q.   What is that file?

12      A.   That's the number list of voters.  And what

13   that is is a list of people who voted at each

14   precinct, not in, you know, any kind of order, just

15   who voted.

16      Q.   Does Gwinnett County use that file?

17      A.   We do.

18      Q.   Let's turn back to the second page.  I guess

19   it would be right in the middle there.

20           Do you see the copy that -- strike that.

21           Do you see the file that's listed Clayton

22   County, slash, GEMS DB, slash, asterisk, asterisk,

23   asterisk dot GBF?

24      A.   Yes.

25      Q.   What is that file?

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1        A.   I have no idea.

2        Q.   Moving to the second from the bottom, do you

3   see the file listed as Richmond County, slash, GEMS

4   DB, slash, 2 period GEMS instructions dot PDF?

5        A.   Yes.

6        Q.   What is that file?

7        A.   According to this, this is a manual on GEMS

8   operation.  I do not -- I have not seen that.

9        Q.   So considering Plaintiff's Exhibit 8 as a

10   whole, is it fair to say that several files are

11   listed in Plaintiff's Exhibit 8 that the Gwinnett

12   County Board of Elections uses?

13        A.   Yes.

14        Q.   Are these files that the Gwinnett County

15   Board of Elections received at some point from the

16   Kennesaw Center for Election Services?

17           MR. STEPHENS:  If you know.

18           THE WITNESS:  I just want to make sure

19      there was no objection to that one.

20           MR. TYSON:  You're fine.

21           THE WITNESS:  Yes.

22           MR. POWERS:  Perhaps, we can have the

23      court reporter read back the question.

24           (Whereupon, the record was read back as

25      follows:

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1          Q.   Are these files that the Gwinnett

2      County Board of Elections received at some

3      point from the Kennesaw Center for Election

4      Services?)

5              THE WITNESS:  Yes.

6  BY MR. POWERS:

7          Q.   Were these files received from the FTP

8  server that Kennesaw Center for Election Services

9  used?

10         A.   I could not confirm that.

11         Q.   Ms. Ledford, do you currently still receive

12  many of the files that are listed in Plaintiff's

13  Exhibit 8?

14         A.   Correct, yes.

15         Q.   Whom do you currently receive the files

16  from?

17         A.   The Secretary of State's Office.

18         Q.   Do you receive those files in person through

19  the means -- strike that.

20              Remind me again how you receive the files

21  listed in Plaintiff's Exhibit 8 from the Georgia

22  Secretary of State's Office?

23         A.   I couldn't tell you how we receive all of

24  those.  I just know there are certain ones that --

25  they let us know they are ready.  We personally go

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1  down.  And we pick them up in a sealed container and

2  unseal them once they are in our office.

3       Q.   Thank you.

4            All right.  Let's turn back to talking about

5  absentee ballots.

6            Running an absentee ballot program in a

7  county the size of Gwinnett County is a complicated

8  operation.  Would you agree?

9       A.   Yes.

10       Q.   Many voters -- strike that.

11            Is it fair to say that there are many

12  absentee ballots cast in Gwinnett County elections?

13       A.   Yes.

14       Q.   Do you recall approximately how many

15  absentee ballots were cast in the November 2018

16  general election?

17       A.   Approximately 18,000.

18            MR. POWERS:  In fact, I'm handing you

19       what I'm marking for identification as

20       Plaintiff's Exhibit 9.

21            (Plaintiff's Exhibit 9 was marked for

22       identification.)

23  BY MR. POWERS:

24       Q.   Maybe we could just go through Plaintiff's

25  Exhibit 9 briefly.

1          First, what is Plaintiff's Exhibit 9?

2      A.   It is the certified election results from

3   the November 6, 2018 general election.

4      Q.   Could you explain briefly what the certified

5   general elections results are?

6      A.   Sure.  This is a listing of all the

7   candidates and issues that appeared on the ballot.

8   It gives you the name, the party, if it was a party

9   official.  It gives you the results of the polling

10  location from election day, absentee by mail,

11  absentee -- I'm sorry -- advanced voting in person

12  and then provisional ballots that were tabulated for

13  these races.

14      Q.   You anticipated my question.

15          So, yeah, if you wouldn't -- so in the

16  middle of the document, it looks like there are five

17  columns:  polling, ABM, AIP, AIP2, PRO -- P-R-O --

18  and total.

19          And if you wouldn't mind just taking me

20  through those columns and explaining what they mean.

21      A.   Sure.  Polling is the votes that were cast

22  at the polling location on election day exclusively.

23          Absentee by mail is all the absentee ballots

24  that were received in the office and tabulated.

25          AIP and AIP2 are advance in-person location.

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1  That's broken down into two columns because the GEMS

2  server will only recognize 99 units for one vote

3  center and we have over a hundred.  So that's broken

4  down into two; nothing specific in either one of

5  those.

6          Provisional is the number of provisional

7  ballots that were cast and tabulated for those races.

8      Q.   Which of the columns listed in Plaintiff's

9  Exhibit 9 are cast on DRE voting machines?

10      A.   Polling, AIP1 and AIP2.

11      Q.   Is it fair to say that the ABM and PRO, or

12  provisional ballot columns, are cast using

13  hand-marked paper ballots?

14      A.   Correct.

15      Q.   I'd like to just briefly run through a

16  couple of the election totals starting with governor.

17          In particular in the governor's election in

18  2018, how many total votes did the three candidates

19  for governor receive?

20      A.   Individually you mean?

21      Q.   Yes.

22      A.   Okay.  Brian Kemp 132,998.  Stacey Abrams,

23  one thousand -- I'm sorry -- 178,097.  Metz 30,892.

24  And then 196 write-in votes.

25      Q.   Thank you.

1        A.   Mm-hmm.

2        Q.   Can you please do the same for the 2018

3   lieutenant governor's election in Gwinnett County?

4        A.   Yes.   Jeff Duncan 132,992.   Sarah Amico

5   170,229.   And then write-in votes 299.

6        Q.   Thank you.   And can you please do the same

7   for the 2018 Secretary of State election in Gwinnett

8   County?

9        A.   Yes.   Brad Raffensperger 130,813.   John

10   Barrow 172,213.   Duval 8,634.   And 127 write-ins.

11        Q.   Thank you.

12             Can you please do -- we're going to skip one

13   and if you could please do the same for me for the

14   commissioner of agriculture race in 2018 in Gwinnett

15   County.

16        A.   Yes.   Black 140,219.   Swan 168,343.   And 247

17   write-ins.

18        Q.   Thank you.

19             And then if we can turn to the next page, if

20   we could turn -- looking in the middle of the page,

21   if you wouldn't mind doing the same for me for the

22   commissioner of labor race in 2018 in Gwinnett

23   County.

24        A.   Butler 138,912.   Keatley 170,286.   One

25   hundred and fifty-two write-ins.

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1        Q.   Thank you.

2        A.   Mm-hmm.

3        Q.   All right.  Let's talk about absentee

4   ballots.

5             Would you mind taking me through, again,

6   from the beginning to the end, the process by which

7   paper ballots are designed, created and disseminated

8   to Gwinnett County voters?

9        A.   Yes.  They are created by the Secretary of

10  State's Office in conjunction with us providing the

11  local information.  They create it.  They send us the

12  ballot proof.  We proof it.  And then we receive a

13  file -- a file is credited.  We create and print --

14  don't create.  I apologize.  We print our own ballots

15  based on need and we mail them to the voters.

16       Q.   When you're creating the absentee ballot,

17  does -- strike that.

18            What role does the GEMS database play in

19  creating the ballot?

20       A.   I couldn't say from the Secretary of State's

21  Office.  We receive the ballot, we put it into it and

22  it aggravates the vote totals.

23       Q.   Is the Gwinnett County Board of Elections

24  proofing the GEMS database?

25       A.   Yes.

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1        Q.   Describe to me that proofing process that

2   the GEMS database --

3        A.   The file that was described in Exhibit 8, we

4   receive that file.  And then we print out all of

5   those ballots and they are manually checked by two to

6   four people depending on the size of the ballot.

7        Q.   For the sake of the record, can you identify

8   the file in Plaintiff's Exhibit 8 that you're

9   referring to?

10       A.   No.  It's not me that does it, so...

11       Q.   Fair enough.  I wouldn't be able to identify

12  it either.

13            So then -- but it's your belief that it's

14  one of the files that is listed in Plaintiff's

15  Exhibit 8?

16       A.   I couldn't say that because I'm not familiar

17  with the file, so I don't want to speculate.

18       Q.   Who at the Gwinnett County Board of

19  Elections is proofing the database?

20       A.   Kristi Royston is the lead and then she

21  chooses the people that work with her on that.

22       Q.   Do you know how she goes about proofing?

23       A.   I don't.

24       Q.   You had mentioned -- strike that.

25            Does the proofing include the Spanish

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1  language?

2        A.   It does.

3        Q.   Who is doing the proofing of the Spanish

4  language portion?

5        A.   Staff members, different ones.

6        Q.   Would the staff members have to know Spanish

7  to proof the Spanish language portion of the --

8        A.   Yes.

9        Q.   Remind me again, so once you've gotten the

10 proof back from the secretary, what happens next?

11       A.   Well, we go through.  We have them make any

12 corrections if there are any.  We reproof, so we may

13 proof one ballot several times depending on what the

14 errors or corrections need to be.

15            Once everything is in order, then we sign

16 off on that ballot.  And that lets them know that

17 everything is good to go for that ballot.

18       Q.   When this proofing takes place, is it a

19 separate process for absentee ballots and the ballot

20 that's displayed on DRE machines or is it the same

21 thing?

22       A.   I don't know.

23       Q.   Does Kristi Royston conduct the proofing

24 process to see that only the voters casting ballots

25 on DRE machines can -- strike that.

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1          Does Kristi Royston proof the ballot that

2    appears on DRE voting machines to ensure that voters

3    can vote only for the contest that they are eligible

4    to vote for?

5          A.   I'm not really -- I'm a little confused.

6              MR. STEPHENS:   You may need to restate

7         the question.

8              MR. POWERS:   So let's take for

9         example -- I'm going mark this as

10         Plaintiff's Exhibit 10.

11             (Plaintiff's Exhibit 10 was marked for

12         identification.)

13   BY MR. POWERS:

14         Q.   Ms. Ledford, what is Plaintiff's Exhibit 10?

15         A.   This is the election summary report for the

16   presidential preference primary from March 1st of

17   2016.

18         Q.   How many contests are on the election

19   summary report for the presidential preference

20   primary?

21         A.   Two.

22         Q.   What contests are those?

23         A.   Republican presidential potential candidates

24   and Democratic presidential potential candidates.

25         Q.   Were there any other presidential elections

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1  or contests on the ballot on March 1st, 2016?

2        A.   No.

3        Q.   Will Gwinnett County be conducting a

4  presidential preference primary on March 24, 2020?

5        A.   Yes.

6        Q.   And will there be -- strike that.

7             For the March 24, 2020 presidential primary,

8  will the Republican and Democratic primaries be on

9  the ballot?

10       A.   Yes.

11       Q.   For president?

12       A.   Yes.

13       Q.   Will any other races be on the ballot?

14       A.   Not to my knowledge, but that's a special

15  election date, so it's possible that other things can

16  appear on that ballot.

17       Q.   Say Kristi Royston is proofing the ballot

18  for a presidential preference primary, is she

19  proofing the ballot to ensure, for example, that

20  voters casting ballots on DRE machines in a

21  Republican primary election will only see the

22  Republican candidates on their ballot and not

23  Democratic candidates?

24       A.   Yes.

25       Q.   How would she go about doing that?

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1    A.  I don't know her procedure for that.

2    Q.  Similarly, for any primary elections, she

3  would proof the ballots and make sure that voters

4  casting a ballot in a particular party's primary

5  would only see candidates for that party's primary?

6    A.  Yes.

7    Q.  Now, let's talk about some of the logistics

8  related to the printing of the paper ballots.

9         You decide how many paper absentee ballots

10  to print for a particular election?

11    A.  We don't preprint.  It's based on need.  So

12  if we get in 25 applications that day, we print out

13  those 25 ballots and mail those.

14    Q.  Let's consider provisional ballots.

15         How do you decide how many provisional

16  ballots to print for a particular election?

17    A.  Based on history and anticipation of the

18  election.  So it varies.  It could be 1.5 percent.

19  It could be one percent of the total active

20  registered voters for a polling location.

21    Q.  How do you disperse those provisional

22  ballots between, for example, different early voting

23  locations?

24    A.  Well, early voting is a little different.

25  Early voting gets a standard number.  They get, for

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1  instance, five of every ballot style.  Now, sometimes

2  it may only be two.  It may be 10.  It depends on the

3  elections that we're having, but they get every

4  ballot style because any voter in the county can go

5  to one of our satellite locations.

6         Q.   Mm-hmm.  Roughly -- strike that.

7              Do you have a sense of how many provisional

8  ballots the early voting location centers might

9  receive?

10        A.   No.

11        Q.   Now, let's turn to election day.

12             How many provisional ballots will be sent to

13 particular polling places?

14        A.   Again, it depends.  It's whatever the

15 election is and what we feel the anticipation is.  It

16 could be one percent.  It could be three percent.

17 There's no -- there's no -- it's kind of a sliding

18 scale depending, again, on the election itself.

19        Q.   Has there ever been a situation in which a

20 polling place has run out of provisional ballots?

21        A.   No.

22        Q.   How much does it cost to print paper

23 ballots?

24        A.   It's 55 cents per page.

25        Q.   How long does it take for the printer to

 1  turn around a print order once you give it to them?

 2       A.   I don't know.

 3       Q.   Does the price of printing paper ballots

 4  depend on the type of printer that's used?

 5       A.   No.  We have Ballot On Demand.  We have our

 6  own printers and it's 55 cents a page regardless.

 7       Q.   Got it.  So for Ballot On Demand printers,

 8  the cost is 55 cents per page?

 9       A.   Correct.

10       Q.   Do you know what the cost per page is on

11  other types of printers?

12       A.   You're talking from other vendors?

13       Q.   (Counsel nods head affirmatively.)

14       A.   No.  I don't remember.

15       Q.   Let's consider the whole absentee ballot

16  process sort of from the beginning.

17            How long in advance do you need to know what

18  the ballot style is to be able to get them printed in

19  time to conduct the absentee ballot process?

20       A.   I'm sorry.  Can you say that question again?

21       Q.   Sure.  I'll say it a little more simply.

22            How long before an election do you need to

23  start preparing for the absentee balloting process?

24       A.   Well, we vote -- whatever the beginning

25  deadline is for that because we have -- depending on

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1   the type of ballot, the -- a voter can request a

2   ballot 180 days prior to election and by law we have

3   to start issuing 40 to 45 days depending upon when

4   you can get the ballot ready.

5            So we would need to have it a couple of

6   weeks -- have it ready to go a couple of weeks prior

7   to that so that we would have a chance to get it

8   loaded and, like you said, to start printing the

9   provisional ballots as well.

10       Q.   So let's --

11       A.   Six weeks before election.

12       Q.   Let's take, for example, the upcoming March

13  presidential primary.

14       A.   Mm-hmm.

15       Q.   If an election -- if the election day itself

16  is March 24th, you would need six weeks before that

17  to start preparing?

18       A.   Minimum.

19       Q.   I think we've touched on this a little bit

20  already, but could you help explain to me how the

21  Gwinnett County Board of Elections ensures that when

22  a voter requests an absentee ballot, that the right

23  ballot style is sent to him or her.

24       A.   Well, with Ballot On Demand, it works with

25  the election net system.  And so the staff during the

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1  day will go in and enter everyone who has requested a

2  ballot.  They would enter any edits that go with that

3  ballot, meaning over 75 military -- you know,

4  disabled.

5           And at some point during the day, they take

6  that file and they load it into the ballot printing

7  file.  And because it's coming directly from ENet,

8  that knows what ballot style to print for that voter

9  and it even prints out with the voter's name on the

10  stub at the top so that when staff members start

11  putting that ballot packet together, they know that

12  they've got John Brown's absentee application, then

13  they have John Brown's ballots and John Brown's

14  labels for his ballot packet.

15      Q.   Have you found this process to be effective

16  in terms of making sure that voters are getting the

17  right ballot?

18      A.   Yes.  It's been much more efficient than the

19  way that we did it previously.

20      Q.   Do you know what the error rate is with

21  respect to voters receiving the wrong ballot style in

22  their paper absentee form?

23      A.   I would have to say it's very minimum --

24  very, very minimal because I don't get complaints

25  about that usually.

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1       Q.  Could you describe in a little bit more

2   detail for me how the Ballot On Demand system

3   interacts with ENet?

4       A.  I really can't.  I'm not the tech person in

5   that.  I know -- I'm the user, so I know it goes from

6   here to there, but I don't know the process itself

7   because I've never been a part of that.  I've seen

8   it, but I've never actually done it.

9       Q.  Sure.  And who kind of takes the lead on the

10  tech side in terms of that process?

11      A.  Our voter registration team.

12      Q.  Mm-hmm.  And remind me again who leads the

13  voter registration team?

14      A.  Well, you haven't heard that name.  It's

15  Shantell Black.

16          MR. POWERS:  All right.  Well, perhaps,

17      now would be an okay time to break for

18      lunch.

19          THE WITNESS:  Oh, sure.

20          MR. POWERS:  Go off the record.

21          (Recess from 12:04 p.m. to 1:04 p.m.)

22  BY MR. POWERS:

23      Q.  Before the break, Ms. Ledford, we were

24  talking about the DRE machines and the testing that

25  was done.  And you mentioned that the Gwinnett County

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1   Board of Elections tests all the voting machines; is

2   that correct?

3        A.   The ones that are going to be used.

4        Q.   On election day and during early voting?

5        A.   Yes.

6        Q.   The testing of the DRE machines is

7   documented by your office; is that correct?

8        A.   Yes.

9        Q.   Roughly speaking, how long does it take to

10  test a DRE machine?

11       A.   Depends on the length of the ballot.  It's

12  takes anywhere from half a minute to a minute to

13  maybe five or six.

14            Now that we have a Spanish language, it

15  takes a little bit longer.  It just depends on the

16  length of the ballot.  It depends on the person

17  that's doing the testing, you know, how quick they

18  are and different factors.

19       Q.   Mm-hmm.  So with the Spanish language now on

20  the ballots, is that range of a minute to five

21  minutes, roughly speaking, increased or --

22       A.   Yeah because it's double.  Because whatever

23  you do in English, you then have to turn around and

24  do in Spanish.  It takes us on average four to five

25  weeks to do all of our testing.

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1        Q.   Four to five weeks?

2        A.   Mm-hmm.

3        Q.   How many employees are you involved in the

4   -- strike that.

5            How many employees are part of the testing

6   of those machines during the four- to five-week

7   period?

8        A.   Again, it depends on the number that we're

9   doing.   Usually, it's a minimum of seven to eight

10   with a maximum of up to 20 to 25.

11        Q.   How many times has -- strike that.

12            Are you aware of any instances in which the

13   logic and accuracy testing caught any errors or

14   mistakes on the DRE machines?

15        A.   No.

16        Q.   If the logic and accuracy testing had caught

17   any errors or mistakes on the DRE machines, would you

18   have been made aware of that?

19        A.   Yes.

20        Q.   Well, do you test the optical scanner in any

21   way as part of the logic and accuracy testing of the

22   DRE machines?

23        A.   Yes.   I think we discussed that earlier.

24   Yes.

25        Q.   From the beginning of the process, what is

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1   the chain of custody for the voting machines as

2   they're brought out of storage and tested and put

3   into the polling places?

4        A.   They -- there is a form.  And whoever

5   receives it at the polling location signs that chain

6   of custody.  They get a copy and then we bring a copy

7   back for our records.

8        Q.   Are there county employees at the individual

9   or early voting locations and polling places who

10  receive the DRE machines or does it tend to be

11  individuals working at, say, the local library or the

12  school --

13       A.   It's whoever the contact at the facility is,

14  yeah.

15       Q.   So let's take a hypothetical where a voting

16  machine is tested and is being sent to an elementary

17  school.

18           Is it generally the policy that the Board of

19  Elections is responsible for delivering the voting

20  machines to the elementary school?

21       A.   Correct.

22       Q.   And then an employee or point of contact

23  with the elementary school would sign a form with the

24  county official who's delivering the machine to say,

25  I'm receiving the DRE machine and taking custody of

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 1   it?

 2        A.   Correct.

 3        Q.   How far in advance of the election would

 4   this change chain of custody occur?

 5        A.   We start delivering the Wednesday prior to

 6   the election and we finish up on Monday.

 7        Q.   Tell me about the time frame for delivering

 8   DRE machines to early voting locations.

 9        A.   Those are delivered on the Saturday before

10   they start because -- or Friday or Saturday depending

11   on whether they are starting on Saturday or Sunday.

12        Q.   Tell me about the chain of custody with

13   respect to the memory cards that are eventually

14   inserted into the DRE machines.

15        A.   Well, that -- the machine -- it's already in

16   the machines when they are delivered.  When we do the

17   L&A testing, they are put in there at that time and

18   they are sealed.  And then it gets delivered.  The

19   poll workers don't insert that; that's already done.

20        Q.   Got it.  Make sure I understand it

21   correctly.

22             Going back to our hypothetical with

23   delivering the voting machines to the elementary

24   school, is it fair to say it's the policy of the

25   Gwinnett Board of Elections when voting machines are
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1  delivered to the elementary school, that the memory

2  cards are actually inserted in the voting machines at

3  the time of delivery?

4      A.  No.  They are inserted during L&A testing.

5  That's what you're testing is that memory card.  So

6  once the testing has been completed, then the unit is

7  sealed with a number seal.

8          The side door is closed and locked and then

9  the unit itself is sealed with a number seal.

10     Q.  And remind me again.  Is that logic and --

11  L&A testing, does that L&A testing occur before the

12  DRE machines are delivered to the elementary school

13  or after they are received by the folks at the

14  elementary school?

15     A.  No.  All the L&A is done prior to the

16  delivery of the equipment.

17     Q.  Got it.  So let me make sure I understand

18  this right.

19          When the voting machines are received at the

20  elementary school, are the memory cards in the DRE

21  machines at that time?

22     A.  Yes.

23     Q.  Would that be true both for machines that

24  are used for early voting and for DRE machines that

25  are used on election day?

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1      A.  Yes.

2      Q.  When is the next stage in the process, once

3  the machines are delivered, at which point the Board

4  of Elections or any election official or poll worker

5  is involved, again, with respect to getting the DRE

6  machines ready or tested?

7      A.  Well, everything is already tested prior to

8  that.  So at six o'clock on election morning, they

9  open up the machines and it automatically runs their

10  zero tape.  And that lets them know that starting on

11  that day there have been no votes cast on that unit.

12      Q.  Is --

13          (Witness conferring with counsel.)

14          MR. POWERS:  I'm sorry.

15          THE WITNESS:  I'm sorry.

16          MR. POWERS:  You want to take a second?

17          (Discussion ensued off the record.)

18  BY MR. POWERS:

19      Q.  So to go back to the hypothetical we were

20  talking about before, the voting machines have been

21  received by the elementary school sometime between

22  the Wednesday and the Monday before election day?

23      A.  Mm-hmm.

24      Q.  And is it fair to say that there's no

25  further testing on the DRE machines or the memory

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 1  cards between when they arrive at the polling site

 2  and when election day opens or before election day

 3  opens at around 6:00 a.m.?

 4        A.   Correct.

 5        Q.   Now, let's talk about what happens with the

 6  DRE machines after the election is over.

 7             Can you please take me through what happens

 8  after the polls close and -- strike that.

 9             Let's -- if you wouldn't mind just telling

10  me what happens with the DRE machines once the polls

11  close on election day.

12        A.   Once they close, the poll workers insert a

13  supervisor card and they do a code.  And that causes

14  the unit to start printing out the election results.

15             And each unit prints out three results.

16  While that's going on simultaneously, numbers are

17  being taken off the express poll.

18             Everything has a recap sheet.  There's a DRE

19  recap sheet where the information is record.  There's

20  an express poll recap sheet where everything is

21  recorded.

22             When that's done, they will pack all of that

23  up.  The memory cards are taken out of each unit.

24  They are put into a sealed bag.  The sealed bag along

25  with some other items are brought back to the

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1   Elections Office on election night and there they are

2   unsealed.

3        Q.   What happens after they are unsealed?

4        A.   That's done at the main office and that's

5   when we start downloading the election results and

6   aggregating it into the GEMS server.

7        Q.   Ms. Ledford, I'm handing back to you what we

8   previously marked for identification as Plaintiff's

9   Exhibit 3.

10       A.   Mm-hmm.

11       Q.   And what is Plaintiff's Exhibit 3?

12       A.   It's the number of provisional ballots that

13  were tabulated for the November 6, 2018 general

14  election.

15       Q.   And does it say -- sorry.

16            Does Plaintiff's Exhibit 3 say how many of

17  those provisional ballots were counted and partially

18  counted and not counted?

19       A.   Correct.

20       Q.   How many provisional ballots were not

21  counted in the November 2018 election in Gwinnett

22  County?

23       A.   Five hundred and sixty-four.

24       Q.   How many were partially counted?

25       A.   One thousand seven hundred eighty-five.

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1          Q.   And how many were -- strike that.

2               How many provisional ballots were completely

3     counted in Gwinnett County in the November 2018

4     election?

5          A.   Four hundred thirty-one.

6          Q.   Thank you.

7               Ms. Ledford, are all of these provisional

8     ballots hand-marked paper ballots?

9          A.   Correct.

10         Q.   And they are counted using optical scanners?

11         A.   Correct.

12         Q.   Ms. Ledford, does Gwinnett County have an

13    intake process with respect to receiving election

14    complaints from voters?

15         A.   Yes.

16         Q.   Could you please describe it to me?

17         A.   It's actually one of the exhibits we

18    provided to you.  At all of our polling locations we

19    provide comments and concerns forms.  And that allows

20    the voters to get information directly to us.

21         Q.   Is that Plaintiff's Exhibit 4?

22         A.   Yes.

23         Q.   Could you please take me through the --

24    well, strike that.

25               Does Plaintiff's Exhibit 4 consist of

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1  individual voter complaint intake forms filled up by

2  voters that -- sorry -- strike that.

3          Plaintiff's Exhibit 4 consists of voter

4  complaint intake forms from the November 2018

5  election?

6      A.  Yes.

7      Q.  Are these forms made available at all

8  polling places and early voting locations in Gwinnett

9  County?

10     A.  Yes.

11     Q.  What are the circumstances in which a voter

12  complaint intake form might be filled out?

13     A.  Anytime they feel like anything was not

14  handled appropriately.  If they feel like there was a

15  problem with their voting machine, if they felt there

16  was a problem with an absentee ballot.  Some people

17  don't like having to cast a provisional ballot.

18          It's just a myriad of any -- a lot of times

19  misinformation that a citizen has received.  They'll

20  go to a polling place.  It confuses them.  So then

21  they write a letter and provide this information.

22  And, of course, then we give them the information

23  they need, so they understand.  So it's all over the

24  place.

25     Q.  Is it the policy of the Gwinnett County

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 1   Board of Elections to respond --
 2        A.  It is.
 3        Q.  -- to each voter's complaint?
 4        A.  Yes.
 5        Q.  Why don't we go through some of the
 6   individual --
 7             (Witness confers with counsel.)
 8             MR. STEPHENS:  We see that there needs
 9        to be a further redaction of that exhibit to
10        comply with statutory requirements.  So
11        maybe at the end of this deposition we can
12        do that.
13             MR. POWERS:  That works for us and,
14        well -- what is the category of information
15        that we need to be redacting?
16             MR. STEPHENS:  Phone numbers and --
17             THE WITNESS:  Some of them have E-mail
18        addresses?
19             MR. POWERS:  Phone numbers and E-mail
20        addresses?
21             MR. STEPHENS:  Yes.
22             MR. POWERS:  Is it okay if we proceed
23        with questioning of the document that will
24        not involve any personal identifiable
25        information?
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1           MR. STEPHENS:  Yes, sir.

2           MR. POWERS:  Great.  And, I think,

3      redacting the pieces of information

4      afterwards is fine.

5           MR. STEPHENS:  All right.

6  BY MR. POWERS:

7      Q.   I should have asked.  Does the Gwinnett

8  County Board of Elections also have an E-mail address

9  which voters sometimes E-mail with complaints?

10      A.   Not specifically.  We have several different

11  E-mail addresses and various things will come through

12  all of those but not one specifically for complaints.

13           The form itself is on the website and it has

14  the information about scanning it back to -- I think

15  it's the voterregistration@GwinnettCounty.com.  So

16  they'll scan those back in, but we don't usually get

17  just a straight complaint through the E-mail address.

18      Q.   Got it.

19           To make sure I understand it correctly,

20  voters will take these voter complaint forms like

21  those in Plaintiff's Exhibit 4 with them from the

22  polling place.  After they vote, they fill them out

23  and then they return them essentially per the

24  instructions on the form.

25      A.   Correct.  And it's also on the website.  So

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1  sometimes they'll do that because they can actually

2  type the information in rather than handwriting it.

3      Q.  Got it.

4          So if you wouldn't mind taking me through

5  the individual voter complaints that you provided in

6  Plaintiff's Exhibit 4, again, not providing any of

7  the personally identifiable contact information but

8  providing the name of the voter and the type of

9  problem that they experienced and, perhaps, starting

10  with the first page of Plaintiff's Exhibit 4.

11      A.  You said you wanted the voter's name?

12      Q.  Yes.

13      A.  Maury -- something -- Johnson Mike.  I can't

14  read their handwriting.

15          This particular voter stated that prior to

16  her casting her ballot, when she was looking at her

17  summary screen, that the card popped out and she did

18  not get to push the "cast ballot" button.

19      Q.  Thank you.

20          Could you explain to me what that means in

21  terms of it popping out and -- yeah, let's start with

22  that.

23      A.  Well, usually, what we have found that it

24  means is that the voter did accidentally get close to

25  or touched the "cast ballot" button without realizing

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1  it because some of those machines are very sensitive.

2  Just like your cell phone, you can just hover your

3  figure over it and it'll do it.  So that is what we

4  found out with most of those.

5       Q.  Let's take it back a step.

6           So what kind of -- what is the nature of the

7  complaint like this with respect to why does it pop

8  back out?  Is it because the voter --

9       A.  Because the "cast ballot" button was touched

10 and that means it record the vote.

11      Q.  Got it.  Make sure I understand this

12 correctly.

13      A.  Sure.

14      Q.  The voter has hit some selections, the

15 screen pops up and then the vote goes through without

16 the voter having an opportunity to review it?

17      A.  I'm not going to say that because I don't

18 know that's the case.

19          I know the voter has it in front of them.

20 If they lay their hand down or get anywhere near

21 that, it will cause it to cast the ballot.  So that's

22 a voter issue not a machine issue.

23      Q.  Fair enough.

24          How did you find out that hovering your

25 finger over the touch screen causes the ballot to be

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1  cast?

2      A.  Because I've been doing these machines since

3  2002.  It's through experience.  It's not any

4  testing.  It's not any super-secret squirrel mission

5  that we did.  It's through use of the equipment.

6  That's one of the things that we noticed.  It's not

7  very often, but it does happen on these machines.

8      Q.  Has these issues occurred in elections prior

9  to 2018?

10     A.  I'm sure it has.  I just don't think it's

11  been significant because we don't get a lot of those

12  kinds of complaints.  They are very, very few.

13     Q.  Mm-hmm.  Got it.

14         But you -- do you recall receiving

15  complaints about this issue in elections prior to

16  2018?

17     A.  I'm sure I have because it's -- you know,

18  there's just a series of complaints that you get and

19  this is just one of the types of complaints that we

20  have gotten.  But, again, very, very few and far

21  between for that particular type.

22     Q.  Mm-hmm.  And say that situation occurs for

23  whatever reason a voter -- say, I'm a voter and I

24  typed in one of my selections wrong and I cast the

25  ballot and I'm like, oh, I made a mistake, is there

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1  anything that can be done to allow that voter to --

2  allow me to recast the ballot or once it's in, it's

3  in?

4          A.   Once it's cast, it's cast.  There's no way

5  to retrieve a ballot.

6          Q.   There's no way to retrieve a ballot on the

7  DRE machine?

8          A.   Yeah because it's randomized.  We wouldn't

9  have any idea which ballot was that voters.

10         Q.   Got it.  Perhaps we could flip to the second

11 page of Plaintiff's Exhibit 4.

12         A.   Sure.  When I touch a candidate on the right

13 side of the screen, it selects another candidate.

14 The right side of the screen is faulty on the third

15 to the last machine on the right side of the front

16 section of the voting booth.  The machine made a

17 selection for me.

18         Q.   What is the name of the voter?

19         A.   Oh, Archel Bernard.

20         Q.   Is essentially what Mr. Bernard saying is

21 that he tried to vote for candidate X and instead

22 candidate Y's name lights up as having been selected?

23         A.   Mm-hmm.  I think so, yes.

24         Q.   How does that kind of problem occur?

25         A.   I have no idea because I don't know --

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1  without being there, I don't know if the voter

2  touched something.  If he had a big finger and put

3  his whole finger down and it registered one instead

4  of the other.  I don't know if he had something on

5  him that touched the screen.

6          You know, without having been there, we

7  don't know.  And that's, you know, another reason why

8  you have that review screen at the end, so if

9  something is incorrect, they can go back and correct

10  it before they cast their ballot.  Like I said, it

11  would be pure speculation to guess that was what

12  caused that.

13      Q.  Has this kind of issue cropped up in

14  elections before the November 2018 election?

15      A.  Usually only in general elections when

16  there's parties involved --

17      Q.  And --

18      A.  -- which lead you to believe it's a voter

19  issue not a machine issue.

20      Q.  Mm-hmm.  Are you aware of any instances in

21  which you or a poll worker has seen this issue occur

22  where you tap one candidate's name and then a

23  different candidate's name lights up?

24      A.  I have never seen it.  I assume the poll

25  officials have since they are in the field with the

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1  voters.  And if we get those phone calls, usually

2  that's what we determine is we will have them walk

3  the voter back through what they did.  And oftentimes

4  it was -- like I said, something touched or whatever.

5  It didn't flip the vote.

6          Q.  Just to make sure I understand, so poll

7  officials have called in to the Board of Elections

8  and said, Hey, I'm having an issue with a voter and a

9  machine where ballot flipping is occurring?

10         A.  No.  They don't use the word "ballot

11  flipping" because that's not what it is.

12         Q.  Sorry, sorry.  My words.

13         A.  Something is different with the machine and

14  we can't tell if it's the voter or the machine.  And

15  what we usually find out is it's the voter and not

16  the machine.

17         Q.  Got it.  Thank you.

18         A.  Just make sure you get that correct.

19         Q.  I appreciate that.

20             So have there been at least some instances

21  where the issue was not the voter?

22         A.  Not to my knowledge.

23         Q.  Could we please turn to the third page of

24  Plaintiff's Exhibit 4?

25         A.  Cassandra Smith.

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1     Q.   What is the nature of Cassandra Smith's

2  complaint?

3     A.   Hers is similar to the first one, that she

4  was on her voting summary screen and the card popped

5  out before she intended for it to.

6     Q.   So this is the same problem where the voter

7  is saying that --

8     A.   It is.

9     Q.   The voter is saying that the vote ended up

10  getting cast without her --

11     A.   -- touching a ballot.

12     Q.   -- initiating it?

13     A.   Yes.

14     Q.   Let's turn to the next page.

15     A.   Patrice Tillman.  This is where she said

16  she's touching the Democratic candidate, but the

17  Republican's name came up instead.  And she was shown

18  how to unselect and reselect the vote.

19          And that was like very similar to what we

20  see all the time.  And because the Democratic

21  candidate is below the Republican candidate, when you

22  go to touch it, if you're a female and you have a

23  long fingernail or you don't press it in the right

24  spot, it will pick up whichever one it reads the most

25  of.  So it would have picked up the Republican

1 candidate.

2       Q.  Got it.

3           The fat finger issue?

4       A.  Yes.

5       Q.  Mm-hmm.  Could we turn to the next page of

6 Plaintiff's Exhibit 4?

7       A.  James Lamb.  Similar issue to the first --

8 the first one where he was on his summary screen and

9 he says that it cast the vote.  He saw the -- what's

10 he calling it -- the sand timer, the timer thing.  I

11 can't think of what it's called.

12          MR. STEPHENS:  The hourglass?

13          THE WITNESS:  The hourglass.  I'm sorry.

14 BY MR. POWERS:

15      Q.  If you wouldn't mind taking me through --

16 was it Mr. Lamb's --

17      A.  Yes.

18      Q.  -- complaint and how an hourglass would show

19 up?

20      A.  When you touch the screen, just like you do

21 on your computer, as it's going through thinking, it

22 has an hourglass and it just rotates.  It doesn't do

23 anything.  It's just there to show you that it's

24 thinking.

25          And so he saw the hourglass come up and

1  thought that he still had time.  But in actuality, he

2  probably had already touched "cast ballot" at that

3  point one way or the other, whether accidentally or

4  on purpose.

5          Q.   Do these machines, DRE machines ever freeze?

6          A.   Yes.

7          Q.   Under what circumstances does a DRE machine

8  freeze?

9          A.   I couldn't tell you.  It's random.  There's

10  no -- there's not anything special.  It's just from

11  time to time, it's pieces of electronic equipment and

12  it will freeze up.

13          Q.   Can a DRE machine freeze while a voter is in

14  the course of making selections?

15          A.   Yes.

16          Q.   What's the procedure that Gwinnett County

17  uses in the event a DRE machine freezes while a voter

18  is making selection?

19          A.   They will turn the machine off and turn it

20  back on because that's how the card pops out.  And

21  then they can look and see if there were any votes --

22  you know, if the voter cast their ballot, which

23  usually if it's frozen, it has not happened, in which

24  case they will be issued a second card.

25              They'll work with that machine.  You know,

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1  they'll do a couple of things.  And if it does not

2  come back up -- or correctly, then they close that

3  machine down and it's not used the rest of the day.

4       Q.  Got it.

5            Could it happen that a machine freezes while

6  the voter is maybe almost finished casting the ballot

7  and then during the restarting process the vote is

8  actually cast and goes through?

9       A.  Not to my knowledge.

10      Q.  Could we please turn to the next page of

11 Exhibit 4?

12      A.  Rebecca Duncan.  Same thing, machine casted

13 my ballot while I was reviewing my ballot.

14      Q.  Got it.

15           So this is the same as some of the

16 complaints we've seen before.

17           And what about the next complaint?

18      A.  Melody Jordan.  And she voted -- voted no --

19 let's see.  Voted no -- she was having a problem with

20 one of the amendment questions.  She said she was

21 voting on the issue.  She was told to push summary

22 and it closed the voting machine down which meant

23 that it cast her ballot.

24           I have no idea if my ballot will be counted.

25 The machine was closed down so no one else would have

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1  to experience the total disappointment.

2       Q.  So does that mean that the machine was taken

3  offline and no longer used afterwards?

4       A.  Correct.  And there may not have been

5  anything wrong with it.  It's just what the poll

6  official decided to do based on this.  I don't know,

7  so...

8       Q.  Great.  You can turn to the next page.

9       A.  Sue Nash.  Same thing, it's on the summary

10 screen and it cast her ballot.

11      Q.  Can we turn to the next page?

12      A.  Mm-hmm.  I can't read this one.  This one

13 sounds like a bad memory card.  It said -- this is

14 from the poll official talking about a voter and said

15 When they put the card in, it came out and said it

16 was invalid.  The count showed that the voter had not

17 cast their ballot, so they were reissued another

18 ballot and they voted on another machine.

19      Q.  Can you help explain what happened with the

20 memory card?  Was it a Ms. Lewis -- was it then --

21 what's the name of the poll worker?

22      A.  Yes.  Occasionally, you will have a memory

23 card -- a memory card?  I apologize -- a voter access

24 card that has the little chip on it just like your

25 credit card does.  And if that gets very, very

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1  dirty -- we try to get them to wipe them off multiple

2  times throughout the day, but there could be just

3  something has gone bad with that card.

4          And, oftentimes, if you put that in a

5  machine, it will come and tell you it's invalid.  And

6  so when that happens, it won't cast a ballot.  So the

7  voter has to be issued a second card.  And sometimes

8  they'll vote on the same machine and sometimes they

9  want to go to a different machine.  It's totally up

10  to a voter.

11      Q.  How does the poll worker ascertain in a

12  situation like that, whether or not a vote was

13  actually cast?

14      A.  They have to stop voting.  And they go

15  around and take a count off of each of the machines.

16  And then they take a count of the number list of

17  voters off of the express poll and they match those

18  numbers up.  If they are one less or one over, then

19  they determine the voter either did or did not cast

20  that ballot.

21      Q.  That seems like a -- strike that.

22          So if we're at a polling place where there's

23  a lot of machines, am I getting it right, that you

24  have to take -- or stop voting at all of the other

25  machines and essentially count all of the ballots

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1 | that have been cast at the precinct that day?
2 |      A.   The number, yes.  And they have to do that
3 | on -- hourly anyway.  And so it's not like they have
4 | to start -- you know, if someone casts that -- if
5 | that happens at five o'clock in the afternoon,
6 | they're really just reconciling from their four
7 | o'clock number on, not all throughout the day.
8 |      Q.   Got it.  Got it.
9 |           That process -- strike that.
10 |           How often does that happen on a given
11 | election?
12 |      A.   I couldn't tell you.  Sometimes we know
13 | about it and sometimes we don't.  So we don't know.
14 |      Q.   Mm-hmm.  What is the Gwinnett County Board
15 | of Elections' retention policy with respect to
16 | complaint intake forms?
17 |      A.   Two years, 24 months.  And there's no --
18 | that is just a county thing because we keep
19 | everything 24 months by law, so we just include that
20 | in that.
21 |      Q.   So if there were complaint intake forms from
22 | prior elections, say the November 2016 election, that
23 | would have been disposed of 24 months after they had
24 | been received?
25 |      A.   Correct.

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1        Q.   Have you received similar complaints about

2   DRE voting machines and elections prior to 2018?

3        A.   Yes.

4        Q.   What kind of investigation do you do to try

5   to figure out what the -- what the problems were and

6   what can be done about it?

7        A.   Well, if the machine does not continue to

8   have problems, there's nothing to investigate.  We

9   have no way of doing forensics on machines and that's

10  not our job.

11            If another voter -- and the poll officials

12  pay attention.  If another voter has a problem with

13  the same machine, then they'll call us and say, Hey,

14  we've got this.  And we would take that out of

15  service.  We wouldn't allow it to be used the rest of

16  the day.

17       Q.   You mentioned that the County doesn't have

18  an ability to conduct a forensic analysis of the

19  machines?

20       A.   Correct.

21       Q.   Have you had any situations where you

22  thought a forensic analysis of a particular machine

23  might be necessary?

24       A.   No.  If we take a machine out of service and

25  we get it back, it gets a ticket put on it and it

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1  goes straight back to the vender.  And they look at

2  it.  If there's anything wrong with it, they fix it,

3  correct it, retest it.

4           It comes back.  It gets tested by Ken --

5  well, it used to be Kennesaw State, now the State.

6  It gets recertified and then gets sent back to the

7  County.

8       Q.  Got it.  And how frequently do you send

9  machines back to the vendor?

10      A.  We send them every year, but the number is

11 relatively low.  Maybe 10, if it's that many.

12      Q.  Did you send roughly 10 machines back to the

13 vendor after the 2018 election?

14      A.  I don't know.

15      Q.  Could would you say 10 is a relatively

16 typical number --

17      A.  Ten or less, yes.

18      Q.  Who is the vendor that you're sending the

19 machines to for maintenance?

20      A.  ES&S.

21      Q.  When you send a machine to ES&S, do they

22 send you back the same machine or do they send you a

23 new one?

24      A.  It depends.  Ninety-nine point nine percent

25 of the time, it's the same machine because it's

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1   usually not a critical error.  It's -- you know,

2   sometimes the batteries just need replacing.

3   Although it still may show 98 or 50 percent or

4   whatever, sometimes the battery on those will just

5   completely die.  And we don't replace the batteries;

6   they do that.

7            We try to do that on a routine basis, but,

8   occasionally, you will have -- just like we said,

9   with the memory card battery, you'll have a battery

10  there that might have something wrong with it.

11           But usually we get back the same -- I only

12  know of maybe -- maybe two or three times that

13  they've actually replaced a machine.  It's usually

14  just something very minor that they can correct with

15  the machine itself.

16       Q.   In the two or three times that they have

17  replaced the machine, has the vender ES&S ever told

18  you why they replaced that?

19       A.   Well, usually, that's not -- the screen died

20  or it gets -- has like wavy lines on it.  So they

21  have to replace those -- those -- that's why I said.

22  It's not ever anything critical.  It's always

23  something along that magnitude.  There's not a

24  disconnect in the wiring or something like that.

25       Q.   You mentioned the batteries sometimes die on

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1  the DRE voting machines?

2       A.   Mm-hmm, even though they are charged every

3  three months.   Yes.

4       Q.   This is probably a dumb question, but who

5  does the charging of the DRE machines?

6       A.   The prep center staff which is Kelvin,

7  Demond and Tiffany.

8       Q.   Is it like there's a charging station --

9       A.   No.   We have what's called pigtail.   So we

10 have -- if you were to see our warehouse, all of our

11 equipment is taking up about three-fourths of it.

12            And we have electric that comes down, pulls

13 down from the top and so they can plug in and charge

14 a whole group at one time.   And every three months

15 that group one will get shifted.   So they're

16 charging.   They'll get shifted to the back.   The next

17 group will move up and they'll get -- and so they

18 have a routine that they do the charging on those.

19       Q.   Got it.

20            Do you have a team of county employees who

21 are moving the machines back and forth or is it the

22 charging outlets that are being moved?

23       A.   It's the outlets at the top.   They are being

24 pulled down and being put into the machines.

25       Q.   Given the -- strike that.

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1          When you receive complaints like these from

2    voters, have you referred any to the Secretary of

3    State's Office for their investigation?

4          A.   Because it doesn't usually have anything to

5    do with them, they don't have anything to do with the

6    equipment at that stage.  That's a problem with the

7    piece.  And so it guess to the vendor and not to the

8    State.

9          Q.   Have you spoken with elections directors

10   from other counties or undertaken other steps to try

11   to minimize voter complaints about their experience

12   with casting ballots on DRE machines?

13         A.   No.  I don't think you can minimize it.

14   It's a voter issue.  It's not a machine issue.  So

15   it's a voter education thing.

16         So we try and -- there's -- I can't think

17   what they're called.  There's little placards in the

18   booth.  If people don't read them, then there's not

19   anything we can do about that.

20         When the machines were first rolled out, we

21   had a big voter education effort through the

22   Secretary of State's Office.  And beyond that,

23   there's not anything that we've been able to

24   determine.

25         And like I said, when you look at the number

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1  of votes cast -- I mean, in this one election we had

2  338,125 and we've got, you know, five complaints.

3  That doesn't minimize these five complaints by any

4  means, but that lets me know that most everybody

5  understands how to use the equipment.  It's just a

6  few.

7         And it may or may not have been their error,

8  but if the machine continues, we take it out of

9  service.  We send it in.  If it doesn't have any more

10  errors throughout the day, then you assume it's a

11  voter issue.

12     Q.  Have you done any kind of voter outreach or

13  survey to see if voter issues with the machines are

14  more widespread than the complaints that have come in

15  through these intake forms?

16     A.  No.  We -- because, you know, if the voter

17  or the poll official will usually let us know if

18  there's issues.  And we just got an outreach team two

19  years ago.  And we just now started doing a lot of

20  going out into -- you know, taking the machines and

21  doing -- again, beginning to do demos and things like

22  that.

23         And, of course, that will ramp up with

24  whatever system the Secretary Raffensperger chooses

25  for us hopefully in the next couple of weeks.

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1         Q.   Let's talk a little bit about the mechanics

2    by which the votes cast on DRE machines are counted.

3              Can you tell me about the process from the

4    point after which the memory cards are taken out of

5    the DRE machines at once polls have closed?

6         A.   Mm-hmm.  Once they've ran their tapes, they

7    remove the memory card.  They are placed into a

8    sealed bag.  They come into the Elections Office with

9    some other specific supplies that they have to turn

10   in on election night.

11             They go into another room where they were

12   unsealed.  They're counted.  And then they're put in

13   mail trays in what we call "election central."  And

14   then they're taken by precinct.  And information is

15   uploaded into the GEMS server where it is aggregated

16   to produce the election results.

17        Q.   After that, are any kinds of reports

18   generated?

19        A.   Yes.  This five-page report -- five-column

20   report -- I'm sorry.  Five-column report card, it's

21   printed out before we leave at night.  We have to

22   provide that to the Secretary of State's Office.

23        Q.   You're referring now to Plaintiff's

24   Exhibit 9?

25        A.   Yes.

 1      Q.   Where are these reports being generated

 2  from?

 3      A.   From GEMS.

 4      Q.   Are the reports that are generated public

 5  records?

 6      A.   They are.

 7      Q.   Are there any reports from the GEMS database

 8  that you know of that are not public records?

 9      A.   I couldn't answer that.

10      Q.   What other reports outside of the

11  statements -- statement of votes cast do you print

12  from the GEMS database?

13      A.   I don't know.

14           Oh, write-in report.  I apologize.  We do

15  produce a write-in report.

16      Q.   Thank you.

17           Earlier we talked about complaints that come

18  from voters with respect to situations where they say

19  the ballot was cast without them initiating it, as

20  well as situations where they say they voted for --

21  try to vote for one candidate but another candidate's

22  name lights up.

23           Are you aware of having received other

24  complaints from voters with respect to using DRE

25  machines?

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1        A.   No.   In a general rule, they like them.

2        Q.   Are you aware of voters ever being issued

3   incorrect ballots when voting in person on a

4   DRE machine?

5        A.   Yes.

6        Q.   Could you please tell me about that?

7        A.   Most oftentimes that happens during early

8   voting when they have every ballot style to choose

9   from.   And -- but when the voter notices it, they

10  raise their hand and the poll official will eject

11  that card out of the DRE without -- you know, it does

12  not cast votes at that point and they are reissued

13  the correct ballot style.

14       Q.   Are there -- strike that.

15            Could there be circumstances in which --

16  strike that.

17            Can anyone other than the voter ascertain

18  whether or not he or she has been issued an incorrect

19  ballot?

20       A.   Just the poll official, but they are

21  issued -- you have Election Net that tells the poll

22  official what ballot style to code for that voter.

23  And then they have an express poll that has all of

24  that on it.

25            So, occasionally, they will -- you know,

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1  especially in a primary where you have two different

2  sets of Democrat and Republican.  That's most of the

3  complaint.  It's not necessarily the wrong ballot

4  style; it's the wrong choice.  Either they wanted

5  Democrat and they got Republican or they wanted

6  Republican and they got Democrat.

7           And voters notice that pretty quickly when

8  they don't see Donald Duck's name; they see Mickey

9  Mouse pop up there.  So when that happens, like I

10  say, we get that the card back and then we reissue

11  them the correct card.

12      Q.   How does it happen that they're given the

13  wrong ballot?

14      A.   Just like I said, they just touch the wrong

15  thing on the express poll.

16      Q.   In terms of like which party, for example --

17      A.   Correct.  They'll be at the right precinct

18  and the right district combo, but they'll touch "R"

19  instead of "D," so it puts those Republican or

20  Democrat -- you know, whichever the case may be.

21      Q.   And is that the poll worker who's hitting

22  the wrong --

23      A.   Correct, yes.

24      Q.   If a voter gets "D" instead of "R" and votes

25  in the wrong party's primary and says -- actually,

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 1  strike that.
 2         Let's take a hypothetical where a voter
 3  votes in the wrong party's primary and actually casts
 4  a ballot and comes back and says, I'm sorry, I voted
 5  in the wrong party's primary, can I get a new ballot,
 6  what happens next?
 7      A.   They can't -- once you touch "cast ballot,"
 8  you have casted your ballot.
 9      Q.   We touched on this a little bit before, but
10  could you please describe the policies and procedures
11  currently in place to make sure that each voter's
12  ballot remains secret?
13      A.   DRE?  Absentee by mail?  Provisional?
14      Q.   Let's take DRE machines.
15      A.   Okay.  Well, obviously, nobody but the voter
16  sees their ballot.  So once they are given their card
17  and they put it into the machine, it pulls up their
18  ballot -- which it only pulls up their ballot.
19         They go through and they make their
20  selections.  They touch "cast ballot."  When they do,
21  the machine -- the machine -- they yellow card pops
22  out.  The card has nothing on it at that point; it's
23  reused throughout that day.
24         Absentee ballots, once they are received in
25  the office, once they are certified and good to be
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1  counted, they are actually in the prep center, which

2  is a secured location.  And then within that secured

3  location they are kept in what's called ballot

4  vaults.

5          Each ballot vault has its own key lock code

6  and that code is changed between every election.  And

7  then on election night when those ballots are opened,

8  the white envelope is sealed inside the yellow.  The

9  yellow has the voter's name.  One person splits that.

10 They take the Wite-Out ® ®.  They separate it from

11 the yellow, but then the next person splits that and

12 takes it out.  So the voter's name is two people away

13 from knowing who that voter was.

14         The provisional ballot, the voter loses

15 their anonymity because they're having to vote a

16 provisional ballot.  So we know that -- you know,

17 because of research we have to do, we have to have

18 specific information.

19         And then the same thing, they are kept

20 secured from the time we start, you know, working on

21 those until we run them to be certified on

22 election -- I mean on certification day.

23     Q.  Ms. Ledford, you had mentioned before that

24 when a voter casts a ballot on a DRE machine, that it

25 essentially could not be pulled back out under any

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 1 | circumstances; is that correct?
 2 |       A.   To my knowledge, it can't.
 3 |       Q.   Has the policy and procedure always been in
 4 | place?
 5 |       A.   For what?
 6 |       Q.   Fair enough.
 7 |            Has it always been the policy or procedure
 8 | of the Gwinnett County Board of Elections that when a
 9 | voter casts a ballot on a DRE machine during early
10 | voting, that that ballot cannot be pulled back out
11 | under any circumstances, including in cases of double
12 | voting?
13 |       A.   To my knowledge, no, it cannot.
14 |       Q.   Was that the case even prior to 2010?
15 |       A.   Yes.
16 |       Q.   Are you aware of situations in which ballots
17 | have been pulled out in other counties in situations
18 | where a voter had double voted?
19 |       A.   No.
20 |            MR. POWERS:  I think now would be a good
21 |       time to take a brief break.
22 |            (Recess from 2:03 p.m. to 2:19 p.m.)
23 | BY MR. POWERS:
24 |       Q.   I wanted to ask if you're aware of there
25 | being calibration issues with respect to DRE voting

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1  machines?  In particular, does it ever happen that a

2  DRE voting machine is not calibrated correctly?

3      A.  No.  It's not that it's not calibrated

4  correctly.  It's calibrated correctly, but when it's

5  delivered and all the shifting in the move,

6  occasionally, we have had to recalibrate.  But that's

7  something that's determined pretty quickly when the

8  poll opens.

9          The poll official opens it up and starts it.

10 If they see something or the first voter comes up and

11 says, Hey, this is not registering correctly, that's

12 one of the things that they look at is the

13 calibration.

14     Q.  Can you explain to me what happens with

15 respect to -- I guess you said machines getting moved

16 around that causes this issue to pop up?

17     A.  Yeah.  When you do L&A testing, you take the

18 machine off of a shelf and you put it on a table.

19         You do the L&A.  You close the machine up.

20 You seal it.  It gets put onto a cart.  Then the cart

21 gets rolled out to the loading dock.  It gets taken

22 off the cart, put on the truck.  It rides around in

23 the truck.  It gets where it goes.  It's taken off

24 the truck and moved into the polling location.

25         And so that's a lot of jostling and moving

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1  around.  We have that, but we don't have it very

2  often.  I mean, we've had it, so I know it exists.

3       Q.  Did this issue pop up in the November 2018

4  election?

5       A.  Not to my knowledge.  I don't know.

6       Q.  Did it pop up in the November 2016 election?

7       A.  I would not know that unless it were a

8  widespread issue.  If it were one or two like the

9  things we saw here, I would not know about it.

10       Q.  So it's the moving of the machines on the

11  trucks and the transportation that causes --

12       A.  That's what we've been told by ES&S.

13       Q.  What ends up being displayed on the machine

14  that causes the poll worker or the voter to say, Oh,

15  there's something in this here?

16       A.  Usually, it's just when they touch it and it

17  doesn't -- like, for instance, some of these where

18  they don't register correctly, that could have been

19  an issue, that it lost its calibration.  That's

20  really how that's discovered because there's not

21  anything that you do necessarily at the poll.  Like I

22  said, it's any type of testing phase that would make

23  that apparent.

24       Q.  When you were pointing to here when giving

25  your answer prior, were you referring to the voter

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 1  complaints --
 2       A.   Yes.
 3       Q.   -- that were in -- what was Plaintiff's
 4  Exhibit --
 5       A.   Four.
 6       Q.   -- 4.
 7       A.   Yeah.
 8       Q.   This issue will actually occur on election
 9  day; is that correct?
10       A.   Yes.
11       Q.   What's the County Board of Elections policy
12  with respect to fixing the problem?
13       A.   The prep center staff will walk the poll
14  official through recalibrating.
15       Q.   Remind me again who the prep center staff
16  would be.
17       A.   Kelvin, Shantell -- I'm sorry.  Kelvin,
18  Demond and Tiffany.
19       Q.   Thank you.
20            The poll worker will then recalibrate the
21  machine themselves?
22       A.   Mm-hmm, yes.
23       Q.   If the poll worker isn't able to recalibrate
24  the machine, what happens next?
25       A.   The machine closes down and it's tagged for
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 1  repair.
 2         Q.   Has that ever happened?
 3         A.   I don't know for sure.
 4         Q.   Okay.   Earlier you mentioned a retention
 5  period of 24 months?
 6         A.   Mm-hmm, yes.
 7         Q.   Does the Gwinnett County Board of Elections
 8  preserve DRE memory card data for 24 months?
 9         A.   I don't know.
10         Q.   I think we've talked quite a bit about
11  proofing the ballot.  I want to talk briefly about
12  proofing the GEMS database.
13              First, does the County Board of Elections
14  proof the GEMS database?
15         A.  I don't know.  That would be my deputy
16  director.
17         Q.   Kristi Royston?
18         A.   (Witness nods head affirmatively.)
19         Q.   Is Ms. Royston the person on the Gwinnett
20  County Board of Elections staff most knowledgeable of
21  the GEMS database?
22         A.   Actually, that would be Kelvin Williams.
23         Q.   What are the responsibilities that Kelvin
24  Williams and Kristi Royston have respectively with
25  respect to the GEMS database?
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1         A.   Well, Kristi is the deputy director, so she

2    just fills in where she's needed.   She has done some

3    stuff in GEMS.   Like I said, I'm not exactly sure how

4    she and Kelvin have divided up their duties with

5    that.

6              Kelvin is the elections coordinator.   So

7    anything and everything that has to do with elections

8    falls under Kelvin.   And Kelvin is the one who on

9    election nights sits in front of the machine.   And,

10   you know, he has a group of folks and they get to

11   upload from the memory card from the polls into the

12   unit.   He is one that does all the reporting at the

13   end and anything to do with the GEMS server really is

14   under Kelvin.

15        Q.   What are Kristi Royston's primary

16   responsibilities?

17        A.   In regard to GEMS?

18        Q.   Generally speaking.

19        A.   Like I said, she's the elections director.

20   So she assists me with making sure everything falls

21   into place and that we meet deadlines and statutory

22   requirements.   She just helps me oversee the process,

23   all voter registration election processes.

24              MR. POWERS:   Thank you.

25              I would like to turn to Plaintiff's

1        Exhibit 7 and kind of go through -- sorry, a

2        couple of different pages here.  If we could

3        turn first to the bulletin on July 26, 2018,

4        and if you could please take a second to

5        read it.

6            (Witness reviews document.)

7  BY MR. POWERS:

8      Q.   Again, we're talking about Plaintiff's

9  Exhibit 7.

10           Could you briefly describe the July 26, 2018

11  bulletin?

12     A.   The Secretary of State's Office was letting

13  the counties know that there was some suspected

14  Russian activity into the websites in Georgia, Iowa

15  and Florida.

16     Q.   Did you receive this bulletin?

17     A.   Yes.

18     Q.   What action did you take in response to

19  receiving the July 26, 2018 bulletin?

20     A.   We requested the onsite security assessment

21  from DHA.

22     Q.   Did that onsite DHA assessment take place?

23     A.   It did.

24     Q.   Roughly when was that?

25     A.   I don't remember.  It was several months

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 1 | after this.
 2 |      Q.   What was the outcome of that?
 3 |      A.   We have not gotten our report -- oh --
 4 |           MR. TYSON:   That's okay.
 5 | BY MR. POWERS:
 6 |      Q.   Have you taken any other actions beyond
 7 | requesting the DHA assessment?
 8 |      A.   A security system was added to our front --
 9 | to our office.  I won't say the front, the whole
10 | office.
11 |           A camera system -- we're getting ready to do
12 | a remodel and they are getting ready to include a
13 | camera system as well as far as physical security.
14 | And that was just in conversation with the DHA; that
15 | was the first thing that he said.
16 |      Q.   What is the purpose of the security camera
17 | in the front office?
18 |      A.   To be sure and watch all of the activities,
19 | including anything that's going on in the prep
20 | center; to make sure we don't have people coming in
21 | from outside who aren't county employees or
22 | authorized to be back there is some way, shape or
23 | form.
24 |           And then what we call election central,
25 | which is where the GEMS server is held currently, it

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1   is behind a double locked door.  Only full-time

2   employees have access to that and we will continue

3   that.  But the monitors will also be watching down

4   that hallway to watch that door to see who's coming

5   and going in and out of that room.

6       Q.  Got it.

7           Did the Gwinnett County Board of Elections

8   take any other actions after receiving the July 26,

9   2018 bulletin?

10      A.  No.

11      Q.  Now, I'd like to ask you to turn to an

12  October 2nd, 2018 unclassified document from the

13  Department of Homeland Security.

14      A.  Mm-hmm.

15      Q.  And, in particular, if you wouldn't mind

16  reading the -- well, first let me go back.

17          What's the title of the unclassified

18  document from the Department of Homeland Security?

19      A.  A Georgia Perspective on Threats to the 2018

20  U.S. Elections.

21      Q.  What is the -- strike that.

22          Did you receive this unclassified document

23  from the Department of Homeland Security?

24      A.  No.  This came from the Secretary of State's

25  Office.

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1    Q.  Fair enough.  Let me ask a better question.

2         Did the Georgia Secretary of State send this

3   document to you?

4    A.  I believe so.

5         (Witness perusing document.)

6         MR. POWERS:  Take your time.

7         THE WITNESS:  Yeah, I think it was

8         attached to an OEB.  Yeah, it was -- yes, it

9         was an attachment to an OEB, to an official

10        election bulletin.

11   BY MR. POWERS:

12    Q.  I should probably go back.

13         How do you receive official election

14   bulletins from the Georgia Secretary of State?

15    A.  Through E-mail.

16    Q.  Which official election bulletin from the

17   Georgia Secretary of State was this unclassified

18   Department of Homeland Security document attached to?

19    A.  I don't know.  I thought I printed them in

20   the order that they were on there.  So this was --

21   that one's August.

22         I don't know.  It would have been just an --

23   it would have been, like I said, something like this

24   kind of explaining to us what it was and then it

25   would have had attachments.  And so I just printed

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1  the attachments.

2          Q.   Got it.

3               If we could go back to the page that we

4  labeled, A Georgia Perspective.

5          A.   Mm-hmm.

6          Q.   What does the Department of Homeland

7  Security document say in general terms?

8          A.   That they are worried about potential

9  influence into the voter registration and/or election

10 system for the state of Georgia.

11         Q.   What's the date on the document?

12         A.   October 2nd, 2018.

13         Q.   Are there any specific threats listed in the

14 document?

15         A.   Yes.

16         Q.   Could you please read them off?

17         A.   All of them?

18         Q.   Yes, please.

19         A.   All right.  Unauthorized entry to the

20 polling places or long-term storage facilities and

21 voting facilities used to store election and voting

22 system infrastructure.

23              Incident of spear phishing or attempts to

24 hack voter registration systems, such as Department

25 of Motor Vehicles or other organizations used to

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 1 | register voters.

 2 |         Attempts to access information technology,

 3 | IT infrastructure used to manage elections, display

 4 | results or for counting or certifying results.

 5 |         Hacking or spear phishing attempts against

 6 | the E-mails or social media accounts of election

 7 | officials, staff or volunteers.

 8 |         Hacking attempts of political party

 9 | headquarters or candidates' IT systems or websites.

10 |         Attempts to hack, alter or disrupt

11 | infrastructure used to process absentee ballots or

12 | attempts to interfere with votes send through the

13 | U.S. postal service.

14 |         Compromise of any networks or system by

15 | cyber actors, including tactics, techniques and

16 | procedures along with the impact observed on election

17 | related systems.

18 |         Any unexplained disruptions at polling

19 | places or training locations which block or limit

20 | voter turnout.  This may include social media

21 | messages or robocalls falsely reporting changed or

22 | closed polling locations or physical incidents at

23 | polling location, including distribution of false

24 | information.

25 |         Disinformation efforts to shut down

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1   government websites to foment social unrest and

2   reduce voter turnout.

3          Impacts to critical infrastructure that

4   limit access to polling stations such as power

5   outages, Internet, telephone, cellular and

6   transportation, traffic control outages.

7      Q.   Thank you.

8          Are you aware of any of these potential

9   threats occurring in Gwinnett County?

10     A.   No.

11     Q.   Elsewhere in Georgia?

12     A.   I couldn't speculate.  I don't know.

13          (Plaintiff's Exhibit 11 was marked for

14     identification.)

15  BY MR. POWERS:

16     Q.   I'm handing you what I've marked for

17  identification as Plaintiff's Exhibit 11.

18          Ms. Ledford, what is Plaintiff's Exhibit 11?

19     A.   You tell me.  Something from the -- Brian

20  Newby from the EAC about information provided to the

21  EAC by the FBI -- from the FBI, a document that

22  provides some information about IP addresses that

23  recommend election officials scan their systems to

24  ensure these IP addresses are not --

25          (Reporter requests that witness slow

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 1        down.)
 2             THE WITNESS:  For election officials to
 3        scan their systems to ensure these IP
 4        addresses are not accessing election
 5        systems.
 6   BY MR. POWERS:
 7        Q.   Is there an attachment to -- strike that.
 8             In Plaintiff's Exhibit 11, it starts with an
 9   E-mail sent on August 23rd, 2016; correct?
10        A.   Yes.
11        Q.   There's an attachment to that E-mail called
12   BOE flash August 2016 final dot PDF.
13             MR. TYSON:  Object just on foundation.
14        I don't think we've established she knows
15        what this E-mail is or that this was the
16        attachment.  I understand it's all put
17        together as one, but maybe you want to
18        establish that she's seen or knows what this
19        is.
20   BY MR. POWERS:
21        Q.   Let's turn to the third page.  And this is
22   labeled FBI flash.
23             Have you seen this document before?
24        A.   I don't remember.
25        Q.   It is possible that you've received this
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1  document?

2       A.  It could be.

3       Q.  Have you received documents like these in

4  the past?

5       A.  Not that say "FBI flash."  Not to my

6  knowledge.

7       Q.  What kinds of documents have you received?

8       A.  The ones like we just saw in Exhibit 7.

9       Q.  The document from the Department of Homeland

10  Security?

11       A.  Correct.

12       Q.  Are there instructions that you received

13  from the Secretary of State with respect to promoting

14  election security in and around the 2018 election?

15       A.  I don't remember.

16       Q.  Aside from the security assessment and

17  installing the camera in the Board of Elections, are

18  there any steps that the Gwinnett County Board of

19  Elections took to further promote the security of the

20  2018 elections?

21       A.  Not to my knowledge.

22       Q.  Are you aware of any attempted intrusions

23  into the Gwinnett County Board of Elections' website

24  or electoral infrastructure?

25       A.  No.

1    Q.   I'd like to switch gears and talk to you a

2  little about Plaintiff's Exhibit 6.

3          In particular, who sent Plaintiff's Exhibit

4  6 to you?

5    A.   I don't remember.  It would have been either

6  for -- oh, Center for Elections Systems so Kennesaw

7  State University.

8    Q.   Do you know when this was sent to you?

9    A.   No.  I don't remember.

10   Q.   What did you do with Plaintiff's Exhibit 6

11  after you received it?

12   A.   Gave it to Kelvin Williams or Kristi

13  Royston.

14   Q.   Do you know what follow-up actions they

15  took?

16   A.   Whatever it says to do in here.

17   Q.   What is that?

18   A.   It's how to export the election results from

19  the GEMS server to the state election night reporting

20  system.

21   Q.   Thank you.  If I could have it back for a

22  second.

23          If I could ask you to turn to the

24  introduction page on the PowerPoint slide in

25  Plaintiff's Exhibit 6.  If you could just read off

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1  what that page says.

2      A.   The SOS office has created a secure system

3  to facilitate the transition of files needed for the

4  election equipment.  County election officials will

5  now receive their election files by remotely

6  accessing and SOS server and downloading their files

7  from this server to their local computer.

8          Your liaison will assist you in downloading

9  the required software and establishing the connection

10  to the SOS server.  The following slides are an

11  overview of the file transfer process once the

12  initial setup has taken place.  Please contact us if

13  you have any questions regarding the transferring of

14  files processed.

15      Q.   Is this something that Kristi and Kelvin

16  would have worked with the Secretary of State's

17  Office?

18      A.   Correct.

19      Q.   Do you know who the liaison is with the

20  Georgia Secretary of State's Office?

21      A.   It's changed several times over the last

22  couple of years.  Since I don't know when we got

23  this, I don't know who it would have been at the time

24  and they may not even still be there.

25      Q.   And I might have misspoken.  Would it have

1  been a liaison with the Center of Elections Systems

2  at that time?

3      A.   No.   It would have been with the Secretary

4  of State's Office.

5      Q.   Okay.   What files would that introduction in

6  the PowerPoint slide have been referring to?

7      A.   The election results.

8      Q.   Would it have been referring to the bulk

9  update?

10     A.   No.   This is the election results for

11  election night.

12     Q.   Okay.   Got it.

13          Where do the election results come from on

14  the county's side?

15     A.   The GEMS server.

16     Q.   Ms. Ledford, can you explain to me what an

17  undervote is?

18     A.   Yes.   It's when someone chooses not to vote

19  in a particular race.   If you have "vote for two" and

20  you don't vote for anyone, that's considered an

21  undervote.   I personally don't consider that an

22  undervote, but that's the legal definition of what an

23  undervote is.

24     Q.   Thank you.   Is it true that there is some

25  amount of undervote in down-ballot contests in

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1  statewide elections?

2       A.  You see it more significantly in down-ballot

3  races, but it starts from the top.

4            I'm personally one of those people if I

5  don't like you, I'm not going to vote for you.  I'm

6  not going to vote for the other person, but I'm not

7  going to vote for you either.

8            That's why I say the legal definition is

9  yes, but you actually see that.  We see that even in

10  presidential elections years.  People will skip the

11  presidential race and vote on everything else.

12            But as a general rule, most voters start out

13  voting everything at the top.  By the time they get

14  to about middle ways to the ballot, you start getting

15  to the local candidates.  You start getting to

16  constitutional amendments and statewide referendums.

17  You tend to see a lot of drop off.

18       Q.  Is there a general pattern in terms of the

19  undervote rates?

20       A.  Not that I've ever seen.

21       Q.  Are you aware that there was an undervote in

22  the November 2018 lieutenant governor's race?

23       A.  Yes.

24       Q.  Are you aware that the undervote in the

25  November 2018 lieutenant governor's race was much

1  larger than had been the case in similar past Georgia

2  elections?

3         MR. TYSON:  Lacks foundation.  Assumes

4     facts not in evidence.

5         You can answer if you know it.

6         THE WITNESS:  What was the question

7     again?

8  BY MR. POWERS:

9     Q.  Are you aware that the undervote in the

10 November 2018 lieutenant governor's election was much

11 larger than had been the case in similar past

12 elections?

13        MR. TYSON:  Same objection, but you can

14    answer if you know.

15        THE WITNESS:  I've never analyzed the

16    pattern, so I couldn't answer that.

17 BY MR. POWERS:

18    Q.  Are you aware of any instances in the past

19 where the undervote for the lieutenant governor's

20 election was much higher than in other statewide

21 down-ballot elections?

22        MR. TYSON:  I'll object.  I think we're

23    assuming facts that she hasn't testified to

24    yet.  So maybe if we can add some foundation

25    on that point, that might be helpful.

1            MR. POWERS:  Yeah.

2    BY MR. POWERS:

3        Q.  We can pull out Plaintiff's Exhibit 10.

4    Take your time.

5        A.  It's at the bottom of the stack evidently.

6    I don't have 10.

7            I have that in 9 -- oh, sorry, it was a

8    single --

9    BY MR. POWERS:

10       Q.  Oh, sorry.  I meant Plaintiff's Exhibit 9.

11       A.  It's this one?

12       Q.  Yes.  Previously I asked you to describe the

13   number of votes cast and the lieutenant governor's

14   race by each candidate; correct?

15       A.  Yes.

16       Q.  As well as the governor's race; correct?

17       A.  Yes.

18       Q.  As well as other down-ballot races; correct?

19       A.  Correct.

20       Q.  Has anyone associated with the Gwinnett

21   County Board of Elections ever discussed the

22   undervote in the November 2018 lieutenant governor's

23   race with you?

24       A.  Yes.

25       Q.  Who is that?

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1       A.   Steve Day.

2       Q.   What did you-all discuss about the undervote

3   in the lieutenant governor's election 2018?

4       A.   I don't remember the exact conversation.  I

5   just know that, you know, after the election, he --

6   about two weeks later, he phoned me and said he had

7   noticed that and was asking me questions and I

8   couldn't answer his questions.  And then I don't

9   think we talked about it anymore after that.

10       Q.   What sorts of questions did he ask you?

11       A.   I don't remember.  I really don't.  I've

12   slept since then.

13       Q.   Did you or anyone associated with the

14   Gwinnett County Board of Elections conduct any kind

15   of analysis of the undervote in the lieutenant

16   governor's race?

17       A.   Not to my knowledge.

18       Q.   Have you ever considered doing any such

19   analysis yourself?

20       A.   No.

21       Q.   Do you know if anyone ever looked at the DRE

22   voting machines or any other aspect of the election

23   apparatus to look for any potential explanation for

24   the undervote in the 2018 lieutenant governor's race?

25       A.   Not to my knowledge.

1    Q.  Are you aware of the elections.kennesaw.EDU

2    server being accessed by Logan Lamb and other

3    individuals.

4          MR. TYSON:  I'll object.  Facts

5       not in -- lack of foundation.

6          I'm sorry.  You're asking if she knows

7       about it, so that's all right.  I'll

8       withdraw the objection sorry.

9          THE WITNESS:  Yes.

10   BY MR. POWERS:

11   Q.  Did that cause you to change any of your

12   procedures in Gwinnett County with respect to

13   maintaining electoral data?

14   A.  No.

15   Q.  Didn't hearing about the Logan Lamb probing

16   cause you to change any other policies or procedures

17   you had been employing?

18   A.  No.

19   Q.  Are you aware of any security measures ever

20   having been taken in Gwinnett County to try to search

21   for malware or other signs of electronic intrusion

22   into Gwinnett County election data?

23   A.  No, but I wouldn't be the one to answer that

24   question.

25   Q.  Who would?

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 1        A.   IT.

 2        Q.   Who's the head IT person at the Gwinnett

 3   County Elections Office?

 4             MR. STEPHENS:   If you know.

 5             THE WITNESS:   Yeah.   Abe -- Abe Kani.

 6   BY MR. POWERS:

 7        Q.   Have you done anything yourself to try to

 8   find out whether there's been any kind of intrusion

 9   into the Gwinnett County elections website or

10   electoral infrastructure.

11        A.   No.

12        Q.   Do you have any concerns about the

13   vulnerability of the existing DRE voting system to

14   intrusion?

15        A.   No.

16        Q.   Why not?

17        A.   Well, like I told you before, I'm not a

18   techie.   And for somebody to have -- to me, for

19   someone to have intrusion in that system, they would

20   have to actually go in, open up the machine and do

21   something to it because as we've said -- and I've

22   heard said many, many -- nothing that we have from

23   the GEMS database to that DRE unit is connected to

24   the Internet.   From that unit going back to our

25   office, there's nothing connected to the Internet.

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1        So I don't know how somebody would get into

2    that system to create havoc or chaos or whatever you

3    want to call it.

4            And I also say that, you know, based on our

5    history with it, we've had many elections, we've had

6    many recounts, everything has always come out

7    correctly.  And with the fewer voter complaints that

8    we got, I think if there was something going on, we

9    would hear more about it from the voters.

10       Q.   Any other reasons?

11       A.   No.

12       Q.   Can election results on the existing DRE

13   voting system be audited?

14       A.   Say that again.  I apologize.

15           MR. POWERS:  Court reporter, can you

16       please read the question?

17           (Whereupon, the record was read by the

18       reporter as requested.)

19           THE WITNESS:  I do not know.

20   BY MR. POWERS:

21       Q.   Are you aware of there ever being any audits

22   of DRE voting systems in Gwinnett County?

23       A.   The only thing I know about that is that

24   Kennesaw State routinely comes out and does things

25   with the equipment.  And by doing that, they're

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1   looking at the individual machines.

2            They will run some type of -- I think it's

3   called a hash program on the GEMS server to be sure

4   that there's nothing there.

5            So beyond that, I don't know -- nobody ever

6   touches our equipment outside of our staff and the

7   state.

8       Q.   When was the last time that the hash

9   procedure was done in Gwinnett County?

10      A.   I don't remember.  It's been within the last

11   couple of years.

12      Q.   Does the current DRE voting system in

13   Gwinnett County have an auditable paper trail?

14      A.   You're talking about VVPAT, like voter

15   verified paper trail?

16      Q.   I'm talking about -- fair enough.  I'll ask

17   you a better question.

18            When a voter casts a ballot on a current DRE

19   voting machine, does the DRE machine create a paper

20   receipt?

21      A.   Not for the individual voter, no.

22      Q.   Have you received any instructions, advice

23   or guidance from the Secretary of State with respect

24   to improving the existing DRE voting system in the

25   past year?

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 1        A.   Improving the DRE voting system?

 2             MR. POWERS:   Would the court reporter

 3        please repeat the question.

 4             (Whereupon, the record was read by the

 5        reporter as requested.)

 6             MR. POWERS:   Thank you.   I'm sorry.   I

 7        missed a word.   I'll ask the question again.

 8   BY MR. POWERS:

 9        Q.   Have you received any instructions,

10   guidance, advise, anything like that, from the

11   Secretary of State with respect to security

12   improvements or enhancements with respect to the DRE

13   voting machines in the past year?

14        A.   In conference, yes.   It was discussed just

15   making sure that everyone was on the same page and

16   that everyone knew there was State Election Board

17   rules and regulation and code that talked about

18   security and who should have access and how you

19   should track your access and things like that.

20             So, yes, encouragement from the Secretary of

21   State to make sure those things are happening.

22        Q.   Let's talk about that encouragement.

23             What -- you mentioned a conference?

24        A.   Mm-hmm.

25        Q.   What conference was this discussed at?
```

1    A.   It would have been either GEOA or VRAG, the

2    two conferences we talked about earlier.  It would

3    have been during one of those.

4        Q.   I know I mentioned them earlier or we

5    discussed them earlier, but can you unpack those

6    acronyms for --

7        A.   Yeah.  VRAG is the Voter Registrar's

8    Association of Georgia and GEOA is the Georgia

9    Election Officials Association.

10       Q.   Thank you.

11            And, roughly, when did this conference take

12   place?

13       A.   We have them twice a year, every other year.

14   Sometimes we have one a year and then the next year

15   we'll have two and the next year we won't have any.

16   So it depends on the presidential election cycle.  We

17   try not to have them when we have other things going

18   on.

19            So I really couldn't -- I know it was

20   discussed.  I don't remember which of the conferences

21   or when it took place.

22       Q.   That's fair.  You think that happened

23   sometime in 2018; is that correct?

24       A.   Well, we didn't have a conference in 2018,

25   so it probably would have been in '17.

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1     Q.   Aside from the 2017 conference, have there

2  been any other DRE voting machine security

3  enhancements or improvements?

4     A.   Just what you saw -- what we have already

5  submitted.

6     Q.   That was Plaintiff's Exhibit 6, the --

7     A.   Yes.

8     Q.   Okay.  Are you aware of any plans to improve

9  the security of the DRE voting machine system in the

10  future?

11     A.   I wouldn't know.

12     Q.   Earlier when we talked about delivering the

13  voting machines to the polling place and I think you

14  had mentioned that there were 11 trucks that the

15  Gwinnett County Board of Elections has the DRE units

16  delivered on; is that correct?

17     A.   Yes.

18     Q.   Are those county trucks?

19     A.   No.  They're rental trucks.

20     Q.   Is it county employees who are taking the

21  voting machines to the various polling places?

22     A.   It is.

23     Q.   What's the security protocol for the truck

24  delivery of the voting machines?

25     A.   Meaning?

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1    Q.   What steps are taken to ensure that the

2  voting machines aren't tampered with in some way

3  during the transportation process from the county

4  board to the polling place?

5    A.   They are loaded up in the truck and locked.

6  And the truck's unlocked when they get to a location.

7  They unload them and they lock it back up and go to

8  the next stop.

9    Q.   You said that it was like 18 -- I'm about to

10  totally make up a number.

11    It was a lot of DRE voting machines; right?

12  How many was it?

13    A.   We have 1800, but we don't usually deploy

14  all 1800.  It can be anywhere from 700 to 1200.  It

15  just de -- or more.  It just depends on, you know,

16  the election.  For instance, the presidential

17  election is going to garner more voting equipment

18  than the special election we had in March.

19    Q.   Mm-hmm.  Right.

20    Does the county hire temporary workers to

21  transport all of these machines?

22    A.   No.  It's county employees.

23    Q.   How long does it take to deliver all of

24  these machines to the various polling places?

25    A.   Three to four days.

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 1          MR. POWERS:  I think now would be a good

 2      time for a brief break.

 3              (Recess from 3:07 p.m. to 3:26 p.m.)

 4  BY MR. POWERS:

 5      Q.   Ms. Ledford, has the Secretary of State

 6  decided which ballot marking devices are going to be

 7  used in future elections in Georgia?

 8      A.   We have not been notified.

 9      Q.   Do you know when you will be notified?

10      A.   No.

11      Q.   Is Gwinnett County participating in a pilot

12  program for the new balloting devices for the

13  November 2019 election?

14      A.   Not to my knowledge.

15      Q.   Has Gwinnett County put in an order for new

16  ballot marking devices in 2019?

17      A.   No because we don't know what we're getting

18  yet.

19      Q.   Is it -- has Gwinnett County put in an order

20  for any new ballot marking devices?

21      A.   No because we don't know what we're getting.

22      Q.   When Gwinnett County eventually does --

23  strike that.

24              Is Gwinnett County conducting any county

25  election in November of 2019?
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1          A.   No.

2          Q.   First, let's talk about cost.

3               When Gwinnett County does eventually order

4    new ballot marking devices, is the county going to

5    have to pay some of the cost for the new devices?

6          A.   Well, we have a potential distribution list

7    from the Secretary of State's office.  So, you know,

8    those are just estimates.  I think at this point I

9    don't think that's solid.

10               So once the system is chosen and we receive

11    the information about the numbers that we will be

12    getting, then we will sit down and analyze it,

13    determine if we feel like we need to order ballot

14    marking devices, poll -- you know, just whatever the

15    components are going to be.

16               So once we get that decision and we know

17    what those rollout numbers are, then that's something

18    that we'll sit down and look at.

19          Q.   So at this point it's too early to say, for

20    example, whether or not Gwinnett County is going to

21    have to pay for any kind of warranty licensing or

22    maintenance fees?

23          A.   Correct.

24          Q.   Is it currently in Gwinnett County's plan to

25    use the new ballot marking devices for the March 2020

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1  presidential primary election?

2        A.   If we have them by then.

3            MR. TYSON:   Off.

4            MR. POWERS:   Let's go off the record.

5            (Discussion ensued off the record.)

6  BY MR. POWERS:

7        Q.   Presuming that the March 24th, presidential

8  primary election date holds, when will the Gwinnett

9  County Board of Elections need to receive the new

10 BMDs and all of the equipment to get them tested and

11 programmed and ready to use for the election?

12       A.   I can't really say because I don't know --

13 you know, without knowing the type and how much we're

14 getting and what things are going to happen before we

15 ever get them from the Secretary of State's Office, I

16 really don't know.

17           But I can go back to what I was saying

18 earlier that we have to start voting 40 to 45 days

19 prior to the election.  So we have to have something

20 in place by then.

21           Again, we're not privy to the rollout

22 information as to who is going to get in phases or

23 how that's going to work.  We don't have that

24 information, so we just don't know.

25       Q.   You'd have to also train election staff on

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1  how to use the new BMDs; correct?

2       A.  Correct.

3       Q.  Poll workers would need to be trained on how

4  to use the new BMDs; correct?

5       A.  Correct.

6       Q.  Would any kind of public education efforts

7  be made to educate voters on how to use the new

8  machines?

9       A.  Yes.

10       Q.  All of that would take some time; correct?

11       A.  Yes.

12       Q.  But it sounds like you don't know how much

13  time the board of election needs for training and

14  public education?

15       A.  Huh-uh.  We know it's going to be a long

16  time, but I couldn't say exactly how much.

17       Q.  Are you spending any time now to plan for

18  implementation of the new BMDs?

19       A.  We can't do that until we know when we're

20  going to get them and we don't know that information

21  yet.

22       Q.  So, essentially, you can't do any planning

23  at this point?

24       A.  Correct.

25       Q.  I'd like to turn briefly back to the

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 1  November 2018 election.
 2          Did you or other Gwinnett County Board of
 3  Elections staff receive complaints about long lines
 4  at in-person voting sites?
 5      A.  Are you talking about election date or
 6  advance voting?
 7      Q.  In November 2018.  Let's start with election
 8  day voting.
 9      A.  Yes because we had a problem at two of our
10  polling locations.
11      Q.  What polling locations were those?
12      A.  I don't remember.  Annistown Elementary
13  which is precinct 2.  I don't remember what the other
14  one was.  It was in the Snellville area as well.
15      Q.  Good memory.
16          What were the issues that happened in the
17  November 2018 -- at those two sites?
18      A.  I think ultimately we determined that there
19  was some bad memory cards -- not memory cards --
20  voter access cards.  We don't know how those got in
21  the stock or if it all happened -- we don't know how
22  that happened, but we did have two precincts that had
23  bad memory cards.
24          We didn't realize it was that.  We thought
25  it was something with the express poll units, so we
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1  did testing, did just a few diagnostic things on that

2  and turned out not to be what it was.

3          And then we determined that it was the voter

4  access card.  Once we got more voter access cards out

5  there to them, then they were able to start voting.

6  And it was still pretty much behind most of the day.

7          Voting never stopped.  There were people

8  casting provisional ballots at those polling

9  locations or had the option.  Some people chose not

10  to.  Some people chose to come back.  Some people

11  chose to go ahead and do it while they were there.

12      Q.  At both of these polling sites -- strike

13  that.

14          So this voter access card problem was

15  essentially the same issue at both Annistown and the

16  Snellville polling place?

17      A.  Yes.

18      Q.  What does it mean if there's a bad memory

19  card?

20      A.  It's not the memory card.  It's voter access

21  card.  It won't accept -- when you put it into the

22  express poll unit, it won't accept the ballot.  It

23  won't accept the ballot program onto that.  So when

24  you try to put it into a DRE, it just pops out and

25  tells you it's an invalid card.  It won't allow -- it

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1  won't bring up a ballot to allow a voter to vote.

2      Q.  Did that voter access card problem result in

3  all of the voting machines at both the Annistown and

4  Snellville polling places being inoperable for a

5  certain period of time?

6      A.  Yes.

7      Q.  Do you know roughly how long that was?

8      A.  About an hour and-a-half to two hours, I

9  think at the longest.

10     Q.  During that hour-and-a-half to two-hour

11  period, voters had the option of casting a

12  provisional ballot or waiting in line for the DRE

13  voting machines to be fixed?

14     A.  Correct.  Well, it wasn't the DRE machines.

15  It was the voter access card.  The machines were

16  good.  It was the voter access card that would not

17  program to let the machines do their job, yes.

18     Q.  To further refine it, they weren't fixing

19  the voter access cards.  They were bringing new voter

20  access cards to replace the faulty ones?

21     A.  Correct.

22     Q.  Great.  Thank you.

23         During that period, did long lines develop

24  at both the Annistown and Snellville polling places?

25     A.  They did.

1       Q.   Did you -- strike that.

2            What was the County Board's response, if

3   any, beyond sending the new voter access cards to the

4   existing polling places?

5       A.   There wasn't.  We just changed them out;

6   made sure they had good cards.

7       Q.   Were voters -- strike that.

8            Did the County Board receive calls from

9   voters?

10      A.   We did.  Yes.

11      Q.   What did the -- strike that.

12           Were the voters -- some of them upset?

13      A.   Yes.  Some them were upset.  Some of them

14  were not, just wanted to understand why there was a

15  line.  Once we explained it to them, some of them

16  were okay.  Some of them were still angry.  Some

17  people don't trust a paper ballot, so they didn't

18  want to vote on a provisional ballot.  So they chose

19  to wait or to come back later in the day.

20           And that particular poll was also kept open

21  two hours by a judge for later in the day, so they

22  didn't actually close until nine o'clock.

23      Q.   You're talking about the Annistown polling

24  place?

25      A.   Yes.

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1      Q.   Was the Snellville polling place kept open

2    late?

3      A.   It was, but it wasn't as long.  I believe it

4    was only about 45 minutes maybe.

5      Q.   And you had mentioned that some voters said

6    that they were going to leave the polling place and

7    come back later?

8      A.   Yes.

9      Q.   Do you know if all of those voters ended

10   upcoming back to the polling place?

11     A.   No.  We do not because we didn't get their

12   names and we didn't track the information.

13     Q.   Why were the voters who were waiting in the

14   lines at the Annistown and Snellville polling places

15   given the option of casting a provisional ballot?

16     A.   Because that's what the State Election Board

17   rules say.  If your equipment is inoperable, you have

18   that paper ballot as a backup.

19          And so we offered it.  Some people took it.

20   Some people didn't.  It just -- depending on what

21   their schedule was for the day.

22          (Plaintiff's Exhibit 12 was marked for

23      identification.)

24          MR. POWERS:  I'm handing you what I've

25      marked for identification as Plaintiff's

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 1        Exhibit 12.

 2             (Witness reviewing document.)

 3             MR. POWERS:  Tell me when you've had a

 4      chance do look at it.

 5             (Witness continues to review document.)

 6  BY MR. POWERS:

 7        Q.   Have you had a chance to take a look?

 8        A.   Yes.

 9        Q.   First, what is Plaintiff's Exhibit 12?

10        A.   It is a declaration under penalty of perjury

11  pursuant to 28 U.S.C. Code 1746 for Derrick Oatis.

12        Q.   And have you seen this document before?

13        A.   No.

14        Q.   On the third page, very top of the third

15  page, Mr. Oatis says that after being redirected, he

16  went to his polling place at the Suwanee public

17  library.

18             Are you aware of their being any issues in

19  the November 2018 election at the Suwanee public

20  library?

21        A.   No.

22        Q.   You don't recall receiving any complaints

23  from voters who were trying to cast ballots at the

24  Suwanee public library?

25        A.   No.
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 1          (Plaintiff's Exhibit 13 was marked for
 2      identification.)
 3  BY MR. POWERS:
 4      Q.   I'm handing you what I've marked for
 5  identification as Plaintiff's Exhibit 13.
 6          What is Plaintiff's Exhibit 13?
 7      A.   It is a declaration by Jeffrey Marion.
 8  Declaration under personality of perjury pursuant to
 9  28 U.S.C. Code Section 1746.
10      Q.   Have you seen Plaintiff's Exhibit 13 before?
11      A.   No.
12      Q.   The voter's name here is Jeffrey Marion.
13          Do you see that?
14      A.   Yes.
15      Q.   It says his polling place is the Annistown
16  Elementary School?
17      A.   Mm-hmm, yes.
18      Q.   That's the -- one of the two polling places
19  that you were referring to in your prior testimony?
20      A.   Correct.
21          (Plaintiff's Exhibit 14 was marked for
22      identification.)
23  BY MR. POWERS:
24      Q.   I'm handing you what I'm marking for
25  identification as Plaintiff's Exhibit 14.
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 1              What is Plaintiff's Exhibit 14?
 2         A.   It's a statement by Velma Lambert.
 3  Declaration under penalty of perjury pursuant to 28
 4  U.S.C. Code Section 1746 and/or a sworn statement in
 5  accordance with Georgia law.
 6         Q.   Do you see that the declarant's name is
 7  Velma Lambert?
 8         A.   Yes.
 9         Q.   She says she voted at the Evangel Community
10  Church in Snellville, Georgia?
11         A.   Mm-hmm.
12         Q.   Is the Evangel Community Church the other
13  polling place in Snellville that you were referring
14  to in your testimony a little while ago?
15         A.   I don't remember.  I remember it was the
16  Snellville area, but I don't remember which location
17  it was.
18         Q.   Is it possible that the Evangel Community
19  Church is one of the two polling places that you're
20  recalling?
21         A.   Like we have a lot of polling places in
22  Snellville, so I really don't know.  My assumption
23  would be yes since it was another long line one.
24         Q.   Do you recall receiving any complaints
25  specifically about the Evangel Community Church?
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 1        A.   I don't.
 2             (Plaintiff's Exhibit 15 was marked for
 3        identification.)
 4   BY MR. POWERS:
 5        Q.   I'm handing you what I'm marking for
 6   identification as Plaintiff's Exhibit 15.
 7             What is Plaintiff's Exhibit 15?
 8        A.   The elections result report tape from
 9   precinct 60 for the November 6, 2018 election.
10        Q.   And I know we touched on this briefly
11   before, but could you remind me what the election
12   result tape is and how it's generated?
13        A.   At the end of the day after the last voter
14   has voted, this is the report that prints out of each
15   DRE unit from each polling location.
16        Q.   What is the purpose of the election result
17   report tape?
18        A.   To report the results from that unit.
19        Q.   Is there a time stamp associated with these
20   reports?
21        A.   A time stamp?
22        Q.   On the election -- sorry.  I'll ask the
23   question again.
24             Is there a time stamp on the election result
25   report tape that's generated at the same time the
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 1  report is being generated?
 2       A.  It looks like it.
 3       Q.  Is that time stamp made on every single
 4  election result report tape that's generated by the
 5  DRE machines?
 6       A.  Yes.
 7       Q.  Could you read for me the top of the
 8  election result report tape?
 9       A.  Gwinnett County, State of Georgia general
10  election November 2nd, 2018.
11       Q.  So this is for the November 6, 2018
12  election?
13       A.  Yes.
14       Q.  Below that it gives date, poll center,
15  machine ID and other information; correct?
16       A.  Yes.
17       Q.  And then below the report number it has a
18  time; correct?
19       A.  Yes.
20       Q.  The time -- what does the time here say?
21       A.  1:18.
22       Q.  And then is there a date given to the right
23  of the time?
24       A.  Yes.
25       Q.  What is the date that's listed here?
```

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1        A.   06/02/2003.

2        Q.   Shouldn't the date given on the election

3    result report tape be November 6th, 2018?

4        A.   I don't know what that date's for, so that

5    could have been an update to the card.  It could have

6    been an update to the machine and it's printing out

7    on this.  I don't know what.

8        Q.   If it was updating, why would it list a time

9    that happened 15 years ago?

10       A.   Because that may have been when it was

11   updated.  I don't know.  Like I said, I don't look at

12   this part of the card.  When I look at these, I'm

13   usually looking at the results.  So I don't know what

14   the top part of that means.  That's something you'd

15   have to ask somebody besides me.

16            (Plaintiff's Exhibit 16 was marked for

17        identification.)

18   BY MR. POWERS:

19       Q.   I'm handing you what I'm marking for

20   identification as Plaintiff's Exhibit 16.

21            Actually, a little bit of clean-up.  Before

22   we turn to 16, with respect to Plaintiff's Exhibit

23   15, would you mind telling me the precinct number and

24   name for Plaintiff's Exhibit 15?

25       A.   It's precinct 60 Lawrenceville D.

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1        Q.   Turn back to Plaintiff's Exhibit 16.

2             What is Plaintiff's Exhibit 16?

3        A.   The election results report from Gwinnett

4   County, State of Georgia general election November 6,

5   2018.

6        Q.   What is the precinct number and name on

7   Plaintiff's Exhibit 16?

8        A.   Precinct 73, Pinckneyville P.

9        Q.   And going down again to the time and date,

10  what is the time listed on Plaintiff's Exhibit 16?

11       A.   1824.

12       Q.   So that would be 6:24 p.m.?

13       A.   Sure.

14       Q.   Is the date -- what's the date on

15  Plaintiff's Exhibit 16?

16       A.   11/06/2018.

17       Q.   Do you know if that time and date stamp is

18  of the date and time that this election result report

19  is being generated?

20       A.   I do not.

21       Q.   Ms. Ledford, I'd like to go back to the GEMS

22  database which we discussed a little while ago.

23       A.   Yes.

24       Q.   How does the -- remind me again how the

25  Gwinnett County Board of Elections receives the GEMS

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1  database from the Secretary of State?

2       A.  We go down to Atlanta and we sign for and

3  receive it in a locked container.  And it's brought

4  back to the office.

5       Q.  Who is the employee with the Gwinnett County

6  Board of Elections that goes down to pick up the hard

7  copy of the GEMS database?

8       A.  It could be anyone from our -- any full-time

9  staff member.

10      Q.  It just kind of depends on who's available?

11      A.  Who has time, correct.

12      Q.  Are there any limitations in terms of which

13  Gwinnett County Board of Elections employees have

14  access to or can be made available to pick up the

15  hard copy of the GEMS database?

16      A.  No.  Again, it's just whoever has time.

17      Q.  Is any kind of nondisclosure agreement

18  required for Gwinnett County staff members who come

19  into contact with the GEMS database?

20      A.  No.

21      Q.  How many people have access to the GEMS

22  database?

23      A.  The GEMS database?

24      Q.  Mm-hmm.

25      A.  Just two.

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1          Q.   Who are those people?

2          A.   Kristi and Kelvin.

3          Q.   How many people have access to the GEMS

4   server?

5          A.   Same.

6          Q.   Does Gwinnett County have a GEMS license?

7          A.   I don't know.  I don't know.

8          Q.   Who with the Gwinnett County Board of

9   Elections might know?

10         A.   No one.  It would be me, so...

11         Q.   Is it fair to say then that Gwinnett County

12   Board of Elections does not have a GEMS license?

13         A.   I would say so, yes, because it's not really

14   our program.

15         Q.   When the Board of Elections employees

16   deliver the DREs to -- strike that.

17              When, for municipal elections, DRE voting

18   machines are transferred to the municipalities, is it

19   Gwinnett County staff or the municipality staff who's

20   responsible for transporting the voting machines to

21   the city?

22         A.   The municipal staff.

23         Q.   When they take possession of the machines,

24   do they have to sign any kind of documentation?

25         A.   There is a chain of command paperwork.  Yes.

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1      Q.   Are there any restrictions or limitations or

2   requirements with respect to which employees with the

3   municipalities are permitted to pick up the DRE

4   voting machines?

5      A.   Not from our side.

6      Q.   When staff for the municipalities -- strike

7   that.

8           So if a municipality sent a contractor or

9   temporary employee to the Board of Elections to pick

10  up the voting machines, you wouldn't turn them away?

11     A.   We've never had that, so it's always been

12  full-time employees of the City.  I think that's just

13  a gentleman's agreement that we've had with them

14  since they started using the equipment.

15     Q.   Got it.  And do municipal employees have to

16  sign any kind of nondisclosure agreement when they

17  take possession of the DRE voting machines?

18     A.   What would they have to disclose?  So no.  I

19  mean, there's nothing on the machine.  They are

20  blank.  They are shells when they get them.  So, no,

21  there's no nondisclosure.

22     Q.   When -- strike that.

23          Prior to DRE voting machines being

24  transferred to municipalities, is all of the memory

25  from those machines erased?

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1        A.   I don't know.   They don't have the memory

2   card in them, so that part is gone.   As far as the

3   redundant, I'm not sure.

4        Q.   The memory cards for the machines go

5   directly from the Georgia Secretary of State's office

6   to the municipalities?

7        A.   No.   The state doesn't have memory cards.

8   The memory cards are all with the voting unit.   So if

9   they get a voting unit, they get the memory card with

10  it.

11           It gets programmed somewhere with the City

12  whether it be a contractor -- I don't know how that

13  part takes place.   They just get the equipment and

14  the peripherals from us and that's it.

15       Q.   Got it.   So just to make sure I understand

16  this correctly, the municipalities are essentially

17  getting a blank -- that's probably a bad way of

18  putting it.   Let me try again.

19           When the voting machines are transferred to

20  the municipalities, the -- is it accurate to say that

21  there's a blank memory card in the voting machines?

22       A.   Correct.

23       Q.   And the memory has been wiped from those

24  cards in advance?

25       A.   Yes.

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1              MR. POWERS:  Perhaps, we can take very

2         brief break.

3              (Recess from 4:06 p.m. to 4:15 p.m.)

4    BY MR. POWERS:

5         Q.  Before we broke, you were talking about the

6    erasure of the internal memory of the DRE.

7              Can you explain to me in general terms how

8    the internal memory is erased from the DRE machines?

9         A.  I cannot because I don't know when that's

10   done or how often that's done.  I just know that in

11   periods that's done and that's really all I know

12   about it.

13        Q.  Is there any particular requirement in terms

14   of when the data has to be removed or deleted?

15        A.  Not to my knowledge.

16        Q.  So is it a discretionary decision made by

17   the Board of Elections staff members?

18        A.  No.  It's not anything that we do.  It's

19   done by the State.

20        Q.  Can you explain to me how that process works

21   in terms of the State removing or deleting the

22   internal memory?

23        A.  Well, if I'm -- I can't talk a whole lot

24   about it because I don't really know.  I can tell you

25   that it has periodically happened since we've had the

1  equipment since 2002.

2          I couldn't tell you if it's done because my

3  memory is just shot on this.  I don't know if it's

4  every -- you know, after every presidential election.

5  I don't know if it's on any -- I don't know what the

6  cycle is on doing that.  But I can tell you in the

7  life of the equipment that we have, it's been done

8  several, several times over the years.

9          Q.   What's the chain of custody at that point?

10         A.   It takes place at our office.  They actually

11 send staff out to our prep center and that's what we

12 do.

13         We line the equipment up for them every day.

14 And I guess they have a list, an inventory list.  And

15 they go through and make sure that they've hit all of

16 the equipment.

17         They do updates.  They do all of that type

18 of internal, I guess, mechanizations or what they

19 deal with.  The staff doesn't do anything with that.

20         Q.   When these deletions happen, are they

21 removing the internal data on all 1800 voting

22 machines?

23         A.   Correct.

24         Q.   How many employees does it take to -- strike

25 that.

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1       How long does it take to delete the internal

2   memory from all 1800 voting machines?

3       A.   They usually do it in about a week,

4   five days.

5       Q.   Just to make sure I'm clear on something,

6   before the County Board of Elections transfers the

7   voting machines to the municipalities, is the

8   internal memory deleted as a matter of policy?

9       A.   As a matter of policy, no.  Like I said it's

10  not something that's done by our staff.  It's done by

11  the State.  And I couldn't say if it's done before --

12  like I said, I don't know what routine it is.  So I

13  don't know that it was always done, you know, in an

14  even numbered year which is when we have elections

15  versus odd numbered years which is when most of the

16  cities have their elections.

17      Q.   As the -- strike that.

18           When was the last time that the internal

19  memory was removed or deleted from the DRE machine?

20      A.   I don't know.  I could tell you it was

21  before 2018 and I don't know if it's been done since

22  then.

23      Q.   Thank you.

24           Now, let's consider a situation in which

25  municipalities had to vote using optical scan.

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 1          How many optical scanners would

 2  municipalities need to conduct an election entirely

 3  using optical scan?

 4       A.   It depends on the size of the

 5  municipalities.  We have some that only have, I

 6  believe, 1600 registered voters and we've got one

 7  that's got almost 30,000.  So it just depends on the

 8  size of the city and what they anticipate their

 9  turnout is going to be.

10       Q.   Based on historical patterns in the past

11  ordering practices of the municipalities, what's the

12  range from the municipality with 1600 people to the

13  one with 30,000 people?

14       A.   For optical scan units?

15       Q.   (Counsel nods head affirmatively.)

16       A.   They usually take two to four because the

17  ones that take two have one and they use it for

18  backup.  And the ones that take multiple would be

19  bigger cities where they were doing their early

20  voting.  You know, they would have them if somebody

21  needed to cast a provisional ballot or further

22  absentee ballot process.  So two to four.

23       Q.   Got it.  So a city with 30,000 people might

24  need four optical scan units?

25       A.   Mm-hmm.
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1       Q.   How many optical scan units does the

2   Gwinnett County Board of Elections currently own?

3       A.   I think we have 36 -- 32 or 36.

4       Q.   Thirty-two or 36?

5       A.   Yes.

6       Q.   So in a situation where cities were

7   conducting elections using optical scan units, would

8   you anticipate receiving a request from --

9   for optical scan units from all Gwinnett County

10  municipalities or only those that currently request

11  DRE voting machines from you?

12      A.   Well, we have 16 cities wholly or partially

13  located in Gwinnett and there is no rhyme or reason

14  as to when or how they choose to use the equipment.

15           So I'm not qualified to answer that question

16  based on I just don't have the history -- it's just

17  all over the place and I wouldn't want to speculate

18  on that.

19      Q.   Got it.

20           So there are 16 municipalities in Gwinnett

21  County?

22      A.   Yes.

23      Q.   Are they all conducting their own elections

24  in November of 2019?

25      A.   For the ones that are having them except for

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1   Braselton and Jackson County because it's the City of

2   Braselton and, actually, Walton County conducts the

3   City of Auburn.

4        Q.   What about Buford?

5        A.   They conduct their own.

6        Q.   Let's consider now the March primary

7   election.

8             If Gwinnett County were holding an election

9   using optical scanners for the March 2020 primary,

10  how many optical scanners would the County need?

11       A.   I don't know.  We would need -- it would

12  have to be a minimum of two for 156 polling

13  locations.  That would be a bare minimum.

14            You've got people standing in line.  It

15  takes a while to read those.  In Gwinnett County, our

16  ballots usually are a little bit longer, so we have

17  to account for that as well.

18            We also have eight advance voting locations.

19  We would need a minimum of five at those so whatever

20  that number would be.  And, like I said, that would

21  be just the bare minimums.  That would not suffice.

22  You would have to have three or four units at the

23  site and probably 10 at the advance voting sites

24  because those scanners are not very quick either.

25       Q.   You've reminded me of something.

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1          So I'm going pivot quickly back to DRE

2    voting machines and in particular to the DRE voting

3    machines that are used for early voting.

4          A.   Mm-hmm.

5          Q.   Roughly, how many DRE voting machines are

6    used for early voting in, you know, the November

7    election in an even numbered year?

8          A.   We have 15 at seven at the sites and 35 at

9    our office.

10          Q.   Make sure I understand this correctly.

11          There are seven early voting sites and each

12    of them, every single one will have 15 --

13          A.   -- 15.

14          Q.   -- DRE machines?  Got it.

15          So all total, there's well over a hundred

16    DRE voting machines used for early voting?

17          A.   Correct.

18          Q.   Are those voting machines that are used for

19    early voting also used for voting on election day?

20          A.   No.  You can't do that.

21          Q.   Why is that?

22          A.   Because that's the way the rules are set up

23    on that.  Those machines, when they close down on

24    Friday, they are sealed up, sequestered and they are

25    brought back to our office.  And that's where they

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 1  stay sealed until 7:00 p.m. on election night.
 2       Q.   You may have said this and I just missed it.
 3            When are the DRE early voting machines
 4  physically moved from the early voting location to
 5  the Board of Elections Office?
 6       A.   On election they're -- some of them are
 7  actually on Friday night as soon as the polls closed
 8  and then others are on Saturday and Monday.  We try
 9  to have them out -- our satellites are community
10  centers at our parks and we don't want to leave the
11  equipment there, you know, more than what we have to
12  even though it's sealed and corded and all that.
13       Q.   Yeah.  Now I'm going to pivot back to
14  optical scan world.
15            Does the Gwinnett County board ever have to
16  purchase its own optical scanners?
17       A.   Yes.
18       Q.   Why does it have to do that?
19       A.   Because the initial rollout in 2002, I
20  believe, we had maybe 20.  And we knew that we were
21  going need more than that, so we purchased just five,
22  six, seven, whatever, here, there over the years.
23  And that's to accommodate not only the absentee
24  ballot but also the provisional ballot because that
25  has continued to get larger and larger.  And with
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 1 | that, we need the machines to count those ballots as

 2 | well.

 3 |      Q.   Where -- strike that.

 4 |           Where do you go to buy new optical scanners?

 5 |      A.   ES&S.

 6 |      Q.   And you purchase it directly from ES&S?

 7 |      A.   Correct.

 8 |      Q.   Have you ever looked to see if Gwinnett

 9 | County could purchase additional optical scanners

10 | from other elections who used to use that kind of

11 | optical scanner but no longer do?

12 |      A.   You mean outside the state of Georgia?

13 |      Q.   Anywhere.  Anywhere.

14 |      A.   We can't use any equipment from outside the

15 | state of Georgia.  We can't buy -- I apologize.  Let

16 | me take that back.

17 |           I think we can actually buy used equipment

18 | now, but that just changed within the last few years.

19 | But we haven't needed to purchase any that way, so

20 | ours have come through ES&S.

21 |      Q.   I was going to ask if you're aware if some

22 | counties in Georgia actually had received optical

23 | scanners from counties from other states?

24 |      A.   I know that other states made it available.

25 | I don't know personally of any county.  We've just

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 1  never had that discussion.
 2            (Plaintiff's Exhibit 17 was marked for
 3        identification.)
 4  BY MR. POWERS:
 5      Q.   I'm handing you what I've marked for
 6  identification as Plaintiff's Exhibit 17.
 7            Could you please tell me what Plaintiff's
 8  Exhibit 17 is?
 9      A.   It's the Election Day Management Training
10  Workbook for the 2018 General Election.
11      Q.   Thank you.
12      A.   Mm-hmm.
13      Q.   If you wouldn't mind turning to chapter
14  five.  I think it's actually the last page of the
15  exhibit.
16      A.   Mm-hmm.
17            MS. MARKS:  She's on a different page
18        than you are.
19            MR. POWERS:  I'm looking at a page that
20        has 60 at the top left-hand corner?
21            THE WITNESS:  I don't have that.
22            (Discussion ensued off the record.)
23  BY MR. POWERS:
24      Q.   So what is corrected Plaintiff's Exhibit 17?
25      A.   It's the Election Day Manager Manual.
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 1        Q.   If you wouldn't mind turning to page 60.

 2        A.   It's actually chapter five of that.

 3        Q.   Chapter five?

 4        A.   Yeah.

 5             MR. TYSON:   Just so we're clear for the

 6        record, this is a portion of the manual not

 7        the complete manual; is that correct?

 8             THE WITNESS:   Yes.

 9             MR. TYSON:   Just so that's clear for the

10        record.

11             MR. POWERS:   Thank you.

12   BY MR. POWERS:

13        Q.   What does chapter five page 60 of the

14   Election Day Manager Manuel discuss?

15        A.   The log sheet for actions taken on DRE and

16   express poll.

17        Q.   Would you mind reading the first sentence?

18        A.   Whenever an update or canceling action is

19   taken either on the express poll or the DRE.

20        Q.   It provides a series of steps after that; is

21   that correct?

22        A.   Mm-hmm.

23        Q.   Is one of those below that, does it say that

24   one of the actions that must be recorded include

25   canceling a ballot on the DRE unit?
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 1      A.   Yes.

 2      Q.   What are the steps that poll officials have

 3  to go through if they are canceling a ballot on the

 4  DRE unit?

 5      A.   I'd have to look.  I don't remember.  It's

 6  been a long time since I've done it myself.

 7      Q.   Specifically, I'll point you to the second

 8  sentence of the first paragraph on the --

 9      A.   Updating a voter's status?

10      Q.   Yeah.

11      A.   If a voter is issued an absentee ballot, the

12  express poll does not reflect whether that ballot was

13  received back or not.

14           So if the voter shows up at the poll and it

15  shows in the express poll that they have been issued

16  an absentee ballot, in order for that voter to then

17  be allowed to vote at the poll, they either have to

18  have the ballot with them to cancel it or they fill

19  out a cancelation form.

20           Once they do that, the poll workers go into

21  Election Net -- I'm sorry -- express poll and they

22  unmark that voter.  And they will take out that

23  absentee notation and put the voter back in an active

24  eligible status.  And then they encode a voter access

25  card and the voter goes to the DRE unit to vote.

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1      Q.   So that's a situation where -- is that --

2   okay.

3           So is that what is being described here with

4   respect to canceling a ballot on the DRE unit itself?

5      A.   No.   That's canceling it on the DRE -- I'm

6   sorry.   That's canceling it on the express poll so

7   that they can then cast it on the DRE.

8           Canceling a ballot on the DRE is the

9   situations we discussed earlier.   If the voter gets

10   the wrong ballot and they realize it but they've put

11   the card in, it comes up and it's Republican versus

12   Democrat.   Then the only way to get the card out

13   without casting a ballot is to cancel the ballot even

14   though it hasn't been cast yet.

15           So we also have to do that from time to

16   time.   And if they do that, then they have to mark

17   that, too, because that's part of their

18   reconciliation at the end of the day.

19      Q.   So that cancellation has to be recorded here

20   even if that vote had been started never actually

21   gets completed?

22      A.   Correct.

23      Q.   It's not referring to a situation which a

24   voter actually completed casting a ballot?

25      A.   Right.   Because as we said earlier, once you

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1  cast the ballot, it starts randomizing it in the

2  unit, so we would have no way to identify that

3  voter's ballot.

4           MR. POWERS:  Got it.  Thank you.

5           (Plaintiff's Exhibit 18 was marked for

6      identification.)

7  BY MR. POWERS:

8      Q.   I'm handing you what I'm marking for

9  identification as Plaintiff's Exhibit 18.

10           What is Plaintiff's Exhibit 18?

11      A.  Official election bulletin from the

12  Secretary of State's Office regarding open records

13  request.

14      Q.  Did you receive this official election

15  bulletin from Chris Harvey?

16      A.  Yes.

17      Q.  What does Plaintiff's Exhibit 18 say?

18      A.  Multiple counties have reported receiving

19  open records requests asking for data such as DRE

20  audit logs, copies of DRE tapes and ballot image

21  reports and/or copies of ballot images.

22      Q.  Could you please read for me the sentence in

23  the third paragraph of Plaintiff's Exhibit 18?

24      A.  Ballot images are not subject to open

25  records requests per the advice of the Attorney

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 1   General's Office.
 2              (Plaintiff's Exhibit 19 was marked for
 3        identification.)
 4   BY MR. POWERS:
 5        Q.   I'm handing you what I've marked for
 6   identification Plaintiff's Exhibit 19.
 7        A.   Mm-hmm.
 8        Q.   What is Plaintiff's Exhibit 19?
 9        A.   I have no idea.  I've never seen it.
10        Q.   Is Plaintiff's Exhibit 19 a ballot image
11   report?
12        A.   I don't know.  I've never seen this before.
13   I've never seen one of these.
14        Q.   Have you ever seen a ballot image report
15   before?
16        A.   No.  No.
17        Q.   That's fair.  Do you know why ballot image
18   reports are no longer a public record?
19        A.   I don't know they were ever public record
20   because we've never been asked for one.  If that's
21   what this is, I've never seen one, so I don't know.
22             So, no, I do not know.
23             MR. POWERS:  Fair enough.  I need
24        another minute or two.  Take a break.  But I
25        think it might be easier actually for you
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1          guys to stay and us to move because I am

2          coming to the end.

3              (Recess from 4:43 p.m. to 4:45 p.m.)

4              MR. POWERS:  Plaintiffs have no further

5          questions.  We would like to meet and confer

6          regarding the discovery issues outlined in

7          your respective letters once the deposition

8          is concluded.

9              MR. TYSON:  I just have a couple of

10         questions for you, Ms. Ledford.

11                         EXAMINATION

12     BY MR. TYSON:

13         Q.  Mr. Powers asked you earlier about whether

14     you trusted the DRE system.  Do you remember that

15     question?

16         A.  Yes.

17         Q.  Why is it that you trust the DRE system that

18     we use in Georgia?

19         A.  Basically, again, it's a history thing.  The

20     way that everything is brought in and programmed and

21     sealed and secured and checks and balances -- and the

22     one thing I will say to that is all these experts

23     that have tested all this equipment have never done

24     it in a true election environment.  They set up their

25     own environment.  They really have no idea what we do

1  and nobody's ever really asked.

2           So I think that there's oftentimes a rush to

3  judgment without asking proper questions or getting

4  more detailed information.  And, you know, for those

5  of us in elections administration, we take our jobs

6  very, very seriously.  And we want every election to

7  be as good as it can.

8           There's no perfect election.  There's

9  absolutely no perfect election equipment, but we've

10  not had -- to my knowledge, we've not had problems

11  with ours or it's not questionable.

12       Q.  We definitely appreciate your work and all

13  the work of your staff.

14       A.  Thank you.

15           MR. POWERS:  And I do, too.

16  BY MR. STEPHENS:

17       Q.  Mr. Powers asked you as well about feeding

18  ballots through optical scanners for recounts?

19       A.  Mm-hmm.

20       Q.  When you have a ballot that is long or

21  additional size, does that take longer to feed

22  through the optical scanner?

23       A.  The optical scanners that we have are not

24  high speed scanners as most people who have watched

25  us count those things knows and if you have -- you

 1  know, and different ones react different ways to

 2  different ballots.

 3          So sometimes you have what's called

 4  shuffling.  You put it in.  It will shuffle it three

 5  or four times and then it takes it.  The next one it

 6  will take and the next one it will shuffle it.  Well,

 7  it won't take, so then you have to turn it upside

 8  down.  You have to do it backwards.  You have to do

 9  it different orientations.

10          So, you know, like I said, you can try to

11  average an amount of time to do a ballot, but if

12  you've got a two-page 18-inch ballot, which is what

13  we had in November and especially when you have

14  multiple folds within the ballot as well, it creates

15  additional time to read those ballots.

16          The easiest ballots to read are the

17  provisionals because they're straight.  We print

18  them, we duplicate them and they go straight into the

19  optical scan.  But the provisional -- absentee

20  ballots are very, very difficult to scan.

21     Q.   Then there was some discussion earlier about

22  the process.  You mentioned having to duplicate

23  98 percent of the provisional ballots.

24          Can you explain a little bit what ballot

25  duplication means for paper ballots?

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1        A.   Yes.   One of the reasons that people can

2   choose to vote a provisional ballot is if they show

3   up at an incorrect poll and they don't have time or

4   make a fuss and don't want to go to the correct poll.

5   Poll officials are -- at that point will offer them a

6   provisional ballot.

7            Well, if they're at the wrong polling

8   location, the ballot at that poll are only for -- or

9   the precinct are only for that precinct.   So if you

10  have a voter that lives in Dacula but they are trying

11  to vote in Snellville, that ballot is not going to be

12  the same.

13           So when that ballot comes in on election

14  night, we have to research that and we pull the

15  correct ballot for the voter.   And then we take the

16  ballot that they actually voted and anything that

17  they were eligible to vote for, we transfer onto that

18  duplicate ballot.   And they're labeled "original" and

19  "duplicate."   And then the duplicate is what is

20  actually read for tabulation.

21           And the duplication process involves three

22  people.   You have to have one person read the

23  original ballot, one person mark the duplicate ballot

24  and one person to monitor that process.

25       Q.   Would you consider the ballot duplication

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1  process a time consuming exercise?

2       A.  Yes.  Because it's very manual.  It's a

3  very, very laborious process.  When people are tired,

4  you know, we came in at four, five o'clock on

5  election morning and we only have three days to get

6  these things done and you're trying to do everything

7  else.  You've got to wrap up an election.

8            It's an accurate process but, again, it

9  takes a very long time to get there.

10      Q.  Once you start counting ballots after the

11 polls close on election night, is there a requirement

12 that you continue counting until you finish?

13      A.  Yes.  We would love that law to be changed.

14 They missed that House Bill 316.  I'm just saying.

15           And I understand.  You don't want to lose

16 the integrity of the system.  And there are people

17 who would think that some Keebler elves come in and

18 manipulate ballots or do something.

19           So, yes, we stay there until we're done,

20 which is oftentimes -- depending on the election

21 could be two or three o'clock in the morning or it

22 could be like this last election where it was four

23 o'clock in the afternoon the next day.

24      Q.  So Wednesday afternoon at four o'clock is

25 when you finished the 2018?

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 1        A.   Yes.  And we came in at five o'clock on
 2    Tuesday morning.
 3        Q.   And that was an election that involved both
 4    DREs for the majority of votes and then paper ballots
 5    for a small subset?
 6        A.   Correct.  And there was a problem with the
 7    printing of the ballots.  DeKalb County had a
 8    problem.  Gwinnett had a problem.
 9             (Reporter requests that witness slow
10        down.)
11             THE WITNESS:  Gwinnett and DeKalb had
12        that problem.  So duplication was greatly
13        multiplied during that time.  So almost
14        every ballot had to be duplicated.  And then
15        some of the duplicated ballots had to be
16        duplicated as well.
17             And so it was a -- and it's a very
18        manual, very laborious process -- laborious,
19        I'm not sure how you pronounce that word.
20    BY MR. TYSON:
21        Q.   And so when you're describing that ballot
22    printing issues, did that keep the paper ballots from
23    being read by the optical scanners?
24        A.   Correct.
25        Q.   And that's why you had to have duplication
```

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1  where it was a format they could actually read?

2        A.   Yes.

3             MR. TYSON:   I don't have any further

4      questions.

5             MR. STEPHENS:   Cheryl?

6                        EXAMINATION

7  BY MS. RINGER

8        Q.   You had spoken a bit about the number of

9  optical scanners that you had.  If you had to do a

10  countywide optical scan paper ballot election, how

11  many scanners do you think you would need?

12       A.   I know we talked about that earlier.  You

13  would have to have a very, very minimum of two per

14  156 --

15       Q.   That's what I missed.  I was looking at my

16  notes and I didn't get it, so --

17       A.   Yeah.  We said a very, very minimum of two

18  for 156 polling locations and then very, very minimum

19  of five for seven satellite voting locations and the

20  main office.

21       Q.   I missed that.  Okay.

22       A.   I don't know where we would store all those

23  ballots either.

24             MS. RINGER:   No further questions.

25             MR. POWERS:   No redirect.

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 1            THE REPORTER:  She's reading and

 2      signing, I take it?  Is she reading and

 3      signing?

 4            MR. STEPHENS:  Yes.

 5            THE WITNESS:  Yes.

 6            (Transcript orders taken by audio

 7      record.)

 8            (Deposition concluded at 4:52 p.m.)

 9            (Signature reserved.)

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CERTIFIED

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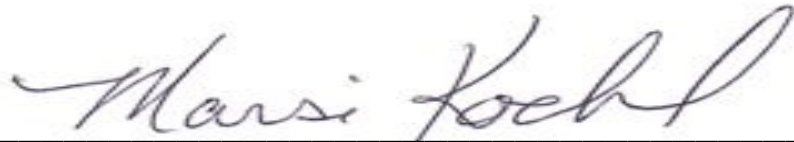
```
 1                      CERTIFICATE

 2

 3    STATE OF GEORGIA:

 4    COUNTY OF FULTON:

 5

 6          I hereby certify that the foregoing

 7    transcript was taken down, as stated in the caption,

 8    and the colloquies, questions, and answers were

 9    reduced to typewriting under my direction; that the

10    transcript is a true and correct record of the

11    evidence given upon said proceeding.

12          I further certify that I am not a relative

13    or employee or attorney of any party, nor am I

14    financially interested in the outcome of this action.

15          This the 28th day of June, 2019.

16

17

18

19    _____

20          Marsi Koehl, CCR-B-2424

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1                          DISCLOSURE

2

3    STATE OF GEORGIA:

4    COUNTY OF DEKALB:

5              Deposition of TERESA LYNN LEDFORD.

6              Pursuant to Article 8.B. of the Rules and
     Regulations of the Board of Court Reporting of the
7    Judicial Counsel of Georgia, I make the following
     disclosure:

8

9              I am a Georgia Certified Court Reporter
     acting as an agent of APG USA, Inc., who was contacted
     by the offices of Lawyers' Committee for Civil Rights
10   Under Law, to provide court reporting services for
     this deposition.  I will not be taking this deposition
11   under any contract that is prohibited by O.C.G.A.
     15-14-37 (a) and (b).

12

13             APG USA, Inc., has no contract to provide
     reporting services with any party to the case, any
     counsel in the case, or any reporter or reporting
14   agency from whom a referral might have been made to
     report this deposition.  APG USA, Inc., will charge
15   its usual and customary rate to all parties in the
     case, and a financial discount will not be given to
16   any party to this litigation.

17

18

19

20

21    Marsi Koehl, CCR-B-2424              Date: 6/28/19

22

23

24

25

Curling et al. v.          Deposition of
Raffensperger et al.    T. LYNN LEDFORD          6/24/2019

```
 1                UNITED STATES DISTRICT COURT
               FOR THE NORTHERN DISTRICT OF GEORGIA
 2                     ATLANTA DIVISION

 3

 4   DONNA CURLING, et al.,      )
                                 )
 5        Plaintiffs,            )
                                 )   CIVIL FILE ACTION
 6   vs.                         )
                                 )   NO. 1:17-cv-02989-AT
 7                               )
     BRAD RAFFENSPERGER, et al., )
 8                               )
          Defendants.            )
 9

10

11        The preceding deposition taken in the matter, on

12   the date, and at the time and place set out on the

13   title page hereof.

14

15        It was requested that the deposition be taken by

16   the reporter and that same be reduced to typewritten

17   form.

18

19        It was agreed by and between counsel and the

20   parties that the Deponent will read and sign the

21   transcript of said deposition.

22

23

24

25
```

Curling et al. v.        Deposition of
Raffensperger et al.   T. LYNN LEDFORD              6/24/2019

```
 1                        CERTIFICATE

 2   STATE OF
     COUNTY/CITY OF
 3

 4       Before me, this day, personally appeared, TERESA
     LYNN LEDFORD, who, being duly sworn, states that the
 5   foregoing transcript of her deposition, taken in the
     matter, on the date, and at the time and place set out
 6   on the title page hereof, constitutes a true and
     accurate transcript of said deposition.
 7

 8

 9                     _____

10                        TERESA LYNN LEDFORD

11

12

13   SUBSCRIBED and SWORN to before me this

14   _____ day of _____, 2019 in the

15   jurisdiction aforesaid.

16

17   _____

18   My Commission Expires       Notary Public

19

20

21    []   No changes made to the Errata Sheet; therefore, I

22   am returning only this signed notarized certificate.

23

24    []   I am returning this signed, notarized certificate

25   and Errata Sheet with changes noted.
```

Curling et al. v.          Deposition of
Raffensperger et al.    T. LYNN LEDFORD          6/24/2019

```
1   DEPOSITION ERRATA SHEET

2   Deponent:  TERESA LYNN LEDFORD

3   Deposition Date:  June 24, 2019

4   To Reporter:

5   I have read the entire transcript of my deposition

6   taken in the captioned matter or the same has been

7   read to me.  I request that the following changes be

8   entered upon the record for the reasons indicated.  I

9   have signed my name to the Errata Sheet and

10  appropriate Certificate and authorize you to attach

11  both to the original transcript.

12

13  Page No.          Line No.

14  Change to:

15  Reason for Change:

16

17  Page No.          Line No.

18  Change to:

19  Reason for Change:

20

21  Page No.          Line No.

22  Change to:

23  Reason for Change:

24

25
```

Curling et al. v.        Deposition of
Raffensperger et al.   T. LYNN LEDFORD          6/24/2019

```
 1            Deposition of TERESA LYNN LEDFORD

 2

 3   Page No.        Line No.

 4   Change to:

 5   Reason for Change:

 6

 7   Page No.        Line No.

 8   Change to:

 9   Reason for Change:

10

11   Page No.        Line No.

12   Change to:

13   Reason for Change:

14

15   Page No.        Line No.

16   Change to:

17   Reason for Change:

18

19   Page No.        Line No.

20   Change to:

21   Reason for Change:

22

23

24   Signature:                        Date:

25            TERESA LYNN LEDFORD
```

EXHIBIT

F

Starting GEMS
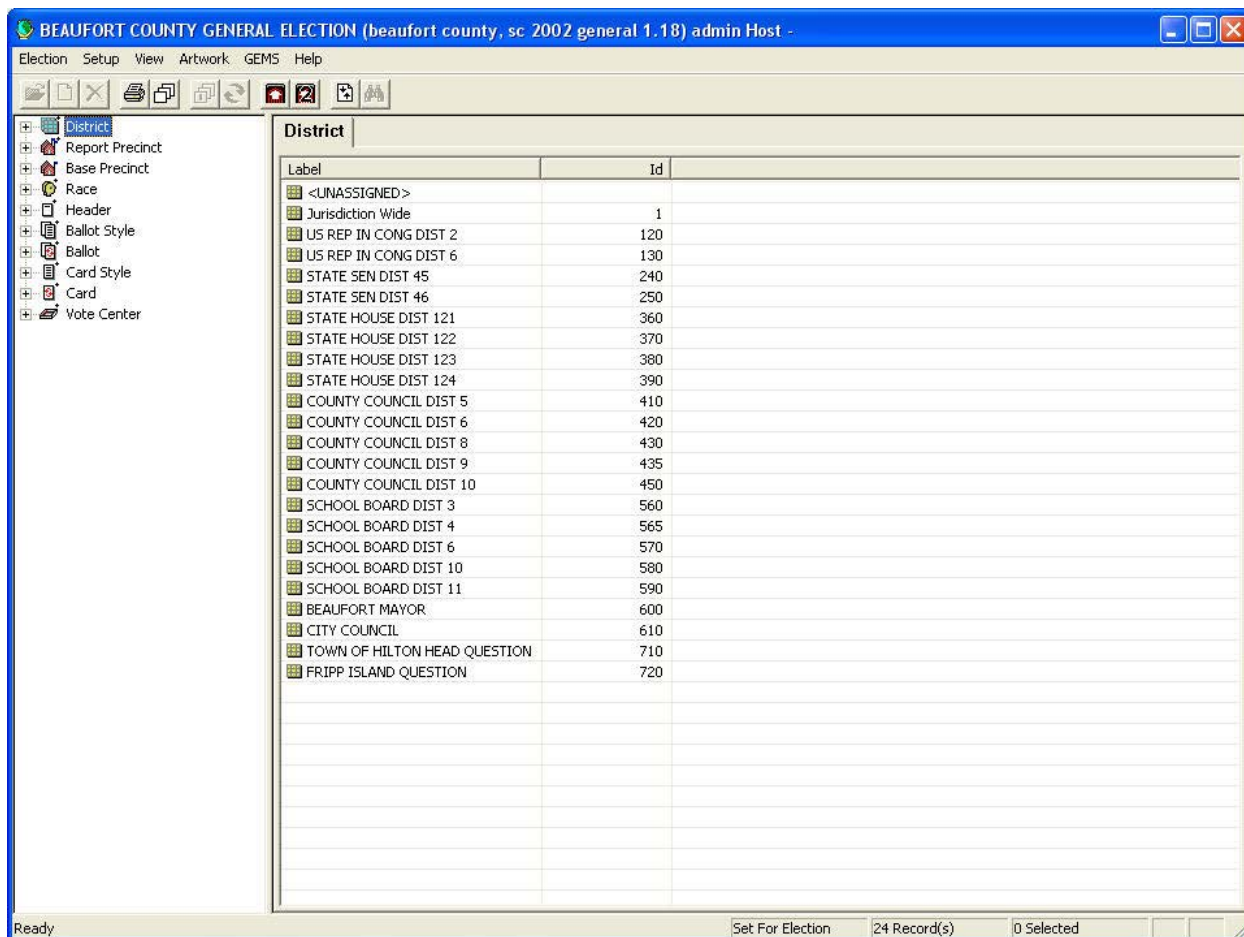


**Figure 2-6.  GEMS window**

## 2.3.  Deleting a database

A GEMS database may be deleted as follows:

1.  Activate GEMS either from the Start menu or from the desktop.

2.  In the Connect to Database window, select the desired database in the Existing Database Name list, then click on the Delete button.

### 3.2.1. Configuring the election

In order to configure election options when configuring the election:

1. Click on Setup in the menu bar, then Election in the drop-down menu.



**Figure 3-8.  Selecting Election Options**

2. Define an election title no more than three lines in the Name of Election field.  This title appears on all GEMS administrative and election results reports.

3. Specify the election date and time in the Election Date/Time fields.  The entire election date may be selected from a drop-down calendar, while the day and year may be also be entered manually.  Changing the date or year automatically cause the weekday to be set accordingly.
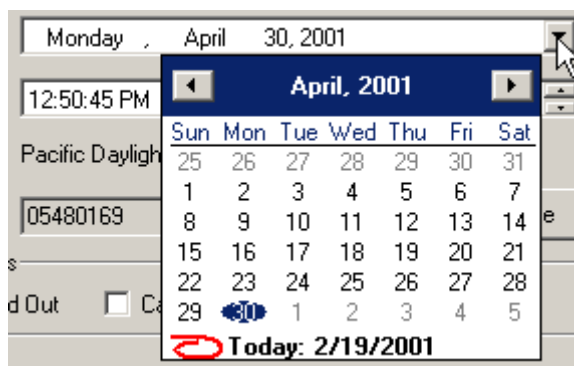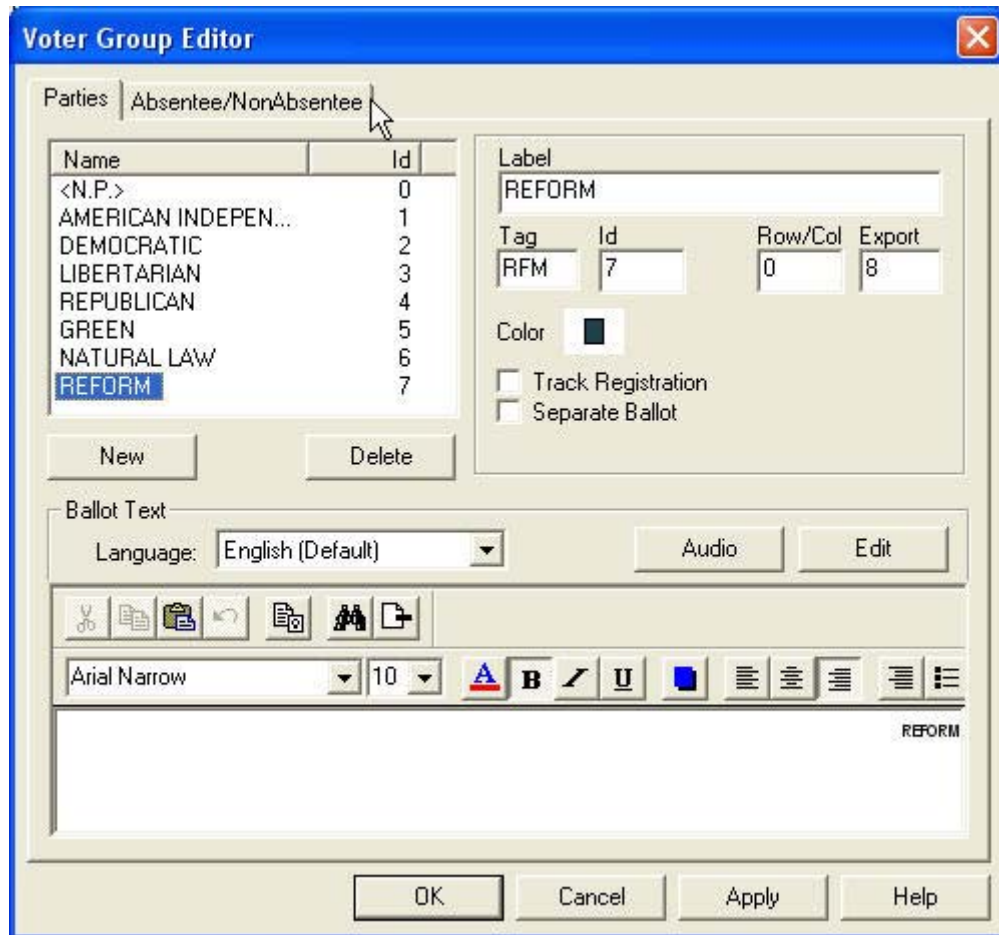


**Figure 3-9.  Activating the calendar**

The calendar is activated by clicking on the drop-down list arrow.  An earlier or later month may be selected by clicking on either of the arrows in the top left- and right-hand corners of the calendar.  A month may also be selected by clicking on the month name in the calendar, which activates a drop-down list containing all months of the year, from which the desired month may be selected.

Election Setup



**Figure 3-26.  Defining voter groups under the Parties tab**

13. If polling and absentee voters are to vote on distinct ballots, click on the Absentee/NonAbsentee tab in order to define Polling and Absentee voter groups.

14. Click on the New button.

15. The new voter group appears with 'VGroup 20' by default in the Label entry field, as well as in the Name display column.  Select the label value, and enter 'Polling'.

16. Enter a 1 to 3 character party code corresponding to the Polling voter group in the Tag field.

17. Change the Id number if the sequence in which the voter group appears is to be altered.

18. Enter an export Id in the Export field, if required.

19. De-select the Rotate Ballots check box if polling ballots are not to be rotated.

20. Enter a value into the Percent Ballots field between 0 and 100, if card quantities are to be computed by absentee/non-absentee voter group.

21. Click on New again, and now define the Absentee voter group in a similar manner.
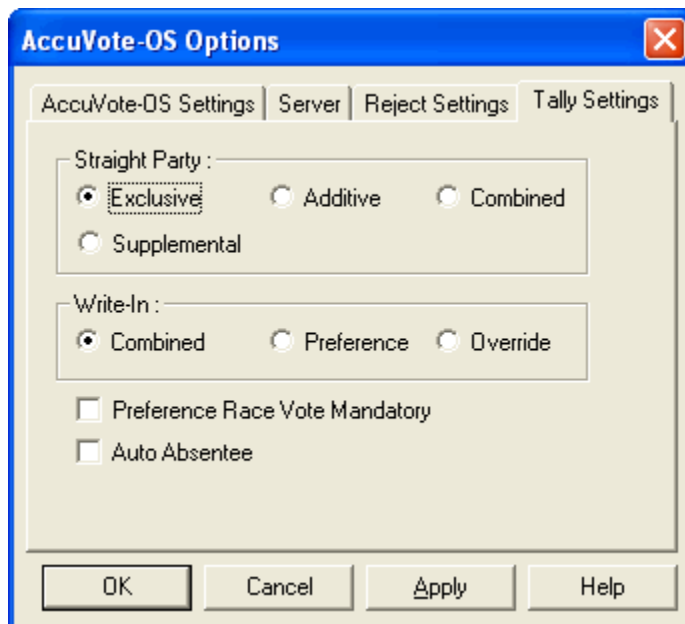
**Figure 3-46.  AccuVote-OS Options - Tally Settings tab**

22.  Click on the OK button in order to save results.

## 3.11.  AccuVote-TS Options

AccuVote-TS display and counting options are defined in the AccuVote-TS Options window.  These options do not apply to the AccuVote-OS.  Changing AccuVote-TS Options requires that memory cards be re-programmed.

Refer to section *3.8 AccuVote-TS Options* in the *GEMS 1.18 Reference Guide* for an explanation of the concepts behind AccuVote-TS options in GEMS.

1.  Click on Setup in the menu bar, then AccuVote-TS Options in the drop-down menu.
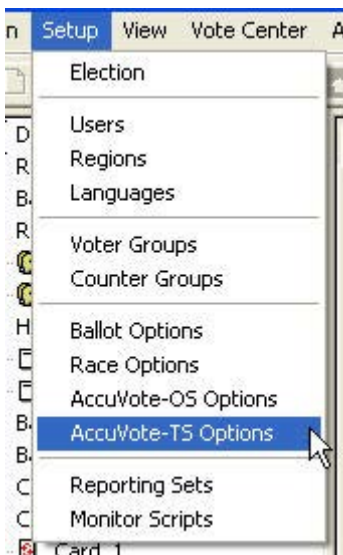


**Figure 3-47.  Activating the AccuVote-TS Options window**

2.  Enter the height of the voting mark box in pixels in Vote Box Size, if it differs from the default value.

DIEBOLD
ELECTION SYSTEMS

Election Setup

3.   Change the number of columns the ballot is to be laid out over in the Columns field, if it differs from the default value.

4.   Enter a desired ballot scale percentage in the Scale Factor field.

5.   Enter the desired button height in pixels in the Button Height field.

6.   Select the One Click Vote check box if voters are not to re-select an existing candidate selection before making another selection.  In order to require the voter to re-select a candidate in order to make another selection in a race, do not select this check box.

7.   Select the PA Straight Party check box if existing candidate selections are to be retained upon making a straight party selection.  In order for candidate selections made prior to the straight party choice to be lost, do not select this check box.

8.   Select Hide Instruction Page to hide the Jump Button 'Instruction' and the Instruction Page. Deselect Hide Instruction Page to show the Jump Button 'Instruction' and the Instruction Page.

The Instruction Page describes how to use the AccuVote-TS unit for voting. The Jump Button 'Instruction' displays the Instruction Page when pressed. The Instruction Page is displayed after the voter inserts their voter card into the AccuVote-TS unit. The Jump Button 'Instruction' is displayed on every page of the voter's ballot.

9.   Select Hide Summary Page to hide the Jump Button 'Summary' and the Summary Page. Deselect Hide Summary Page to show the Jump Button "Summary' and the Summary Page.

The Summary Page displays a summary of all races and voter's selections for each race after the last race on the ballot has been displayed. The Jump Button 'Summary' displays the Summary Page when pressed. The Summary Page is displayed when the last race on the voter's ballot has been displayed and the Next button is pressed. The Jump Button 'Summary' is displayed after the Summary Page has been displayed and either a race summary is selected or the Back button is pressed.

10.   Select Hide Jump Buttons to hide the Jump Buttons 'Instructions' and 'Summary'. Deselect Hide Jump Buttons to show the Jump Buttons 'Instructions' and 'Summary' during a voter's voting session.

(See the descriptions of the Instruction and Summary Pages options above.)

11.   Select the Confirm Ballot check box if a confirmation dialog box prompting the user to confirm that they would like to cast their ballot is to be displayed before the voter's ballot is cast.

12.   Select the Voter Group Color check box if the color defined for a voter group in the Voter Group Editor is to determine the AccuVote-TS background page color in a closed primary election.  Do not select the check box if the voter group color is not to determine the AccuVote-TS page color in a primary election.  Do not select the check box in a general election.

13.   Select the Race Keys check box in order to be able to advance to the next race, or return to the previous race, without traversing the entire candidate list.  In order to require the voter to traverse the entire candidate list in order to advance to the next race, or return to the previous race, do not select this check box.

14.   Leave the Play All Candidates check box selected in order to require the audio voter to traverse the entire candidate list before continuing to the next race, or returning to the prior race.  De-select the check box in order to allow the voter to traverse voted candidates only in the candidate list if the maximum number of candidates have been voted in the race.

15.   De-select the Warn Undervotes check box if the audio voter should be able to continue to the next race or return to the prior race without being presented with an undervote warning, if less than the number to vote for has been voted in the race.  Leave the check box selected if the voter is to be presented with a warning message upon attempting to leave an undervoted or blank voted race.

16. Select the Pollworker Audio check box if an audible tone is to be played at the outset of voting the ballot as well as upon ballot casting. Do not select the check box if no audible tone is to be played in the course of voting.

The AccuVote-TS supports installation of a printer called the AccuView Printer Module (AVPM). This printer has been designed to allow voters to print and review their selections in each race while voting their ballot on the AccuVote-TS unit. When using the AVPM, voters may also optionally change and reprint their selections before their ballot is cast. A summary of all races on the voter's ballot (including races in which no votes are cast) and all voter's selections are printed to the AVPM summary/verification tape.

For information on installing the AVPM on an AccuVote-TS unit, see the *AccuView Printer Module Hardware Guide*.

17. Select Disable AVPM to disable printing ballot summary/verification information. When this option is not selected, ballot summary/verification information will be printed to the AVPM installed on the AccuVote-TS unit.

18. Select Print Candidate IDs to print the candidates ID numbers and names on the AVPM summary/verification tape. When this option is not selected, candidate names are printed, but their ID numbers are not.

19. Select Print Bar Codes to print all ballot summary/verification information in human readable text format and bar code format. When this option is not selected, candidate names are printed in human readable text format only.

20. Select Bar Code with Write-Ins to print barcodes of candidate names and Write-In candidate names in human readable text format and bar code format on the AVPM summary/verification tape. Note that when using this option, the Print Bar Codes option must also be selected. When this option is not selected, all candidate names are printed in human readable text format only.

21. Select Use Dual Roll to configure the AVPM to print summary/verification information on one paper roll and election reports on another roll.

Note: Printing reports on one paper roll and ballot summary/verification information on another requires manually uninstalling and reinstalling the appropriate paper roll on the AccuView Printer Module during an election. See the *AccuView Printer Module Hardware Guide* for details.

22. Select Log to Printer to print Audit Log entries to the AccuVote-TS printer. Deselect this option to disable printing Audit Log entries to the AccuVote-TS printer.

23. Select Pedantic to print all trivial Audit Log entries to the AccuVote-TS printer. Deselect this option to disable printing trivial Audit Log entries to the AccuVote-TS printer.

For example, an audit record is created for every ballot that is cast on the AccuVote-TS unit.
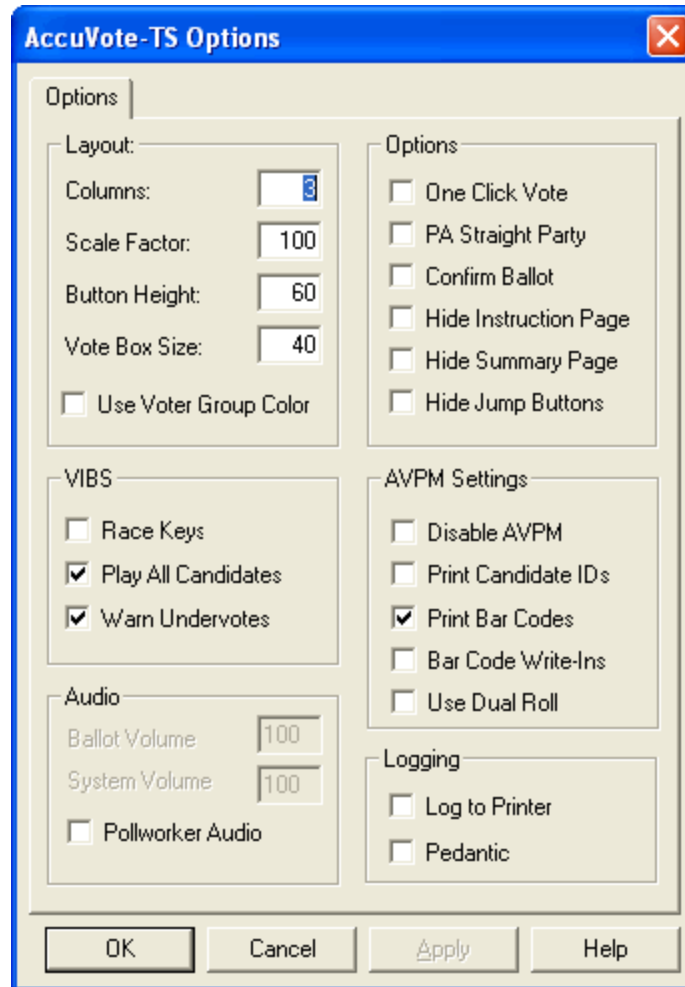
**Figure 3-48.  AccuVote-TS Options window**

24.  Click on OK in order to save results.

## 3.12. Reporting sets

Races are grouped into *reporting sets* for the purpose of customizing election results reports, composing monitor scripts, and configuring recounts.  Instead of directly selecting the races intended to be included in an election results report, the desired set of races may be pre-defined as a report set.

Refer to section *3.9 Reporting Sets* in the *GEMS 1.18 Reference Guide* for an explanation of the concepts behind reporting sets in GEMS.

### 3.12.1.    Adding reporting sets

1.  Click on Setup in the menu bar, then Reporting Sets in the drop-down menu.

9. Once the last district category has been defined, click on the OK button in order to exit the District Editor and save results.



**Figure 4-2.  Adding a district**

10. Now districts are added to each district category.  Select the first district category in the expanded district list in the tree view, right-click, and select Add Sub-District in the pop-up menu.
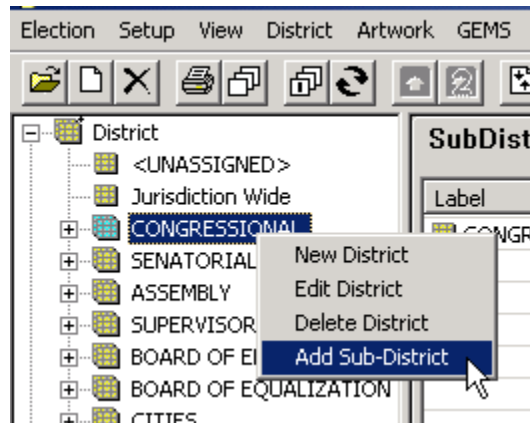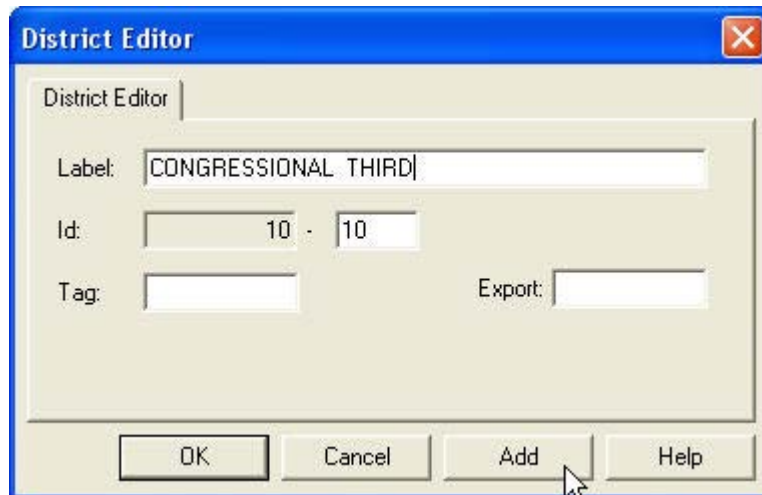


**Figure 4-3.  Adding a sub-district**

11. Enter the full district name in the Label field in the District Editor.

12. Change the Id number in the Id field in order to change the sequence of the district within the district category, if necessary.

13. Enter a tag value in the Tag field.

14. Enter an export value in the Export field, if necessary.

15. Specify the rotation number in the Start Rotation # field, if the district category is a rotation district.

16. Click on the Add button.

17. Continue adding districts in the district category in this manner.

18. Once the last district has been defined to the district category, click on the OK button in order to exit the District Editor and save results.

19. Continue adding districts to the remaining district categories in the same manner.

**Figure 4-4.  Rotation district**

## 4.1.3.    Updating districts

Update districts as follows:

1.  Double-click on the district to update.
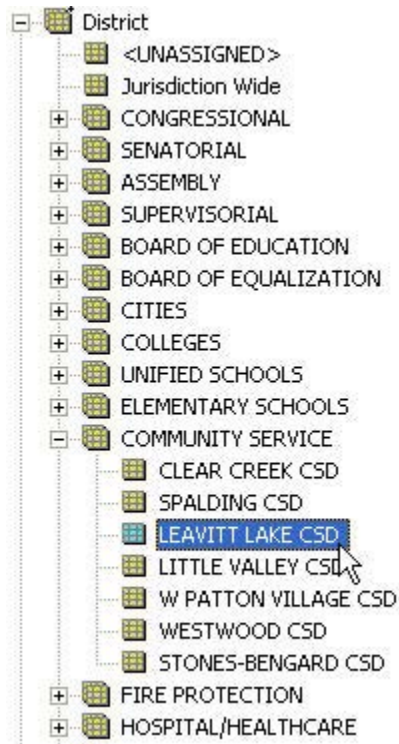


**Figure 4-5.  Opening District Editor for update**

2.  In the District Editor, change the descriptive district label in the Label field, if necessary.

3.  Change the Id number in the Id field in order to change the sequence of the district in the district list, if necessary.

4.  Change the tag value in the Tag field, if necessary.

5.  Enter or change the export value in the Export field, if necessary.

6.  Click on the OK button to save changes.

7.  Continue updating districts as necessary.



**Figure 4-6.  Adding a district**

## 4.1.4.    Deleting districts

Deleting a district removes the district from the database as well as any of the district's linkages to base precincts.  Any race linkages defined for the district are set to <Unassigned>.  Deleting a district category removes the category as well as all subdistricts from the database.  A district category that has been set to rotation district cannot be deleted until the Rotation District check box is de-selected.

1.  Expand the district category in the tree view.

2.  Select the district and click on the Delete Record icon.

3.  Click on the Yes button in order to confirm the deletion.

4.  Continue deleting districts in this manner.
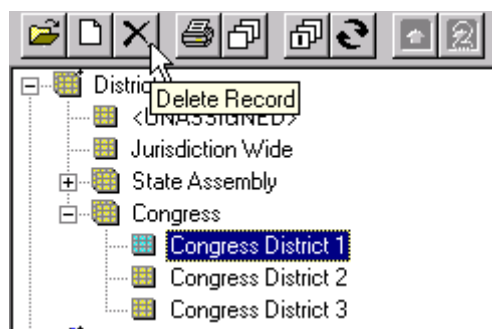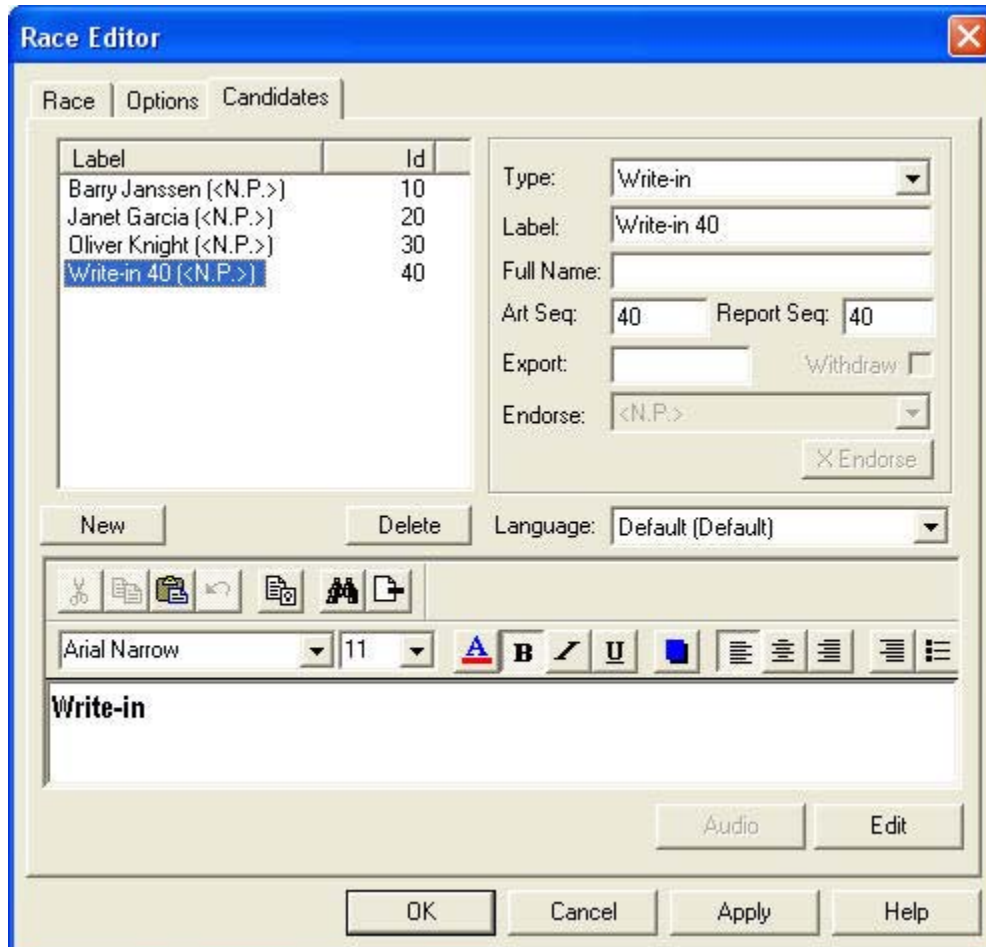


**Figure 4-7.  Deleting a district**

**DIEBOLD**
ELECTION SYSTEMS

Races and Candidates

    i.  Click on the X Endorse button.

    ii.  Endorse the second partisan instance of the candidate.

    iii.  Continue cross-endorsing candidates in this manner, until all partisan instances of the cross-endorsed candidate have been defined.

i.  For every language defined in the election:

    i.  Select the applicable language from the Language drop-down list.

    ii.  Using the formatting tools and options available, enter candidate text for the language in the ballot text field at the bottom of the Candidates tab.

    iii.  Click on the Audio button in order to record, import, or format audio information corresponding the candidate/language combination.



**Figure 5-4.  Race Editor - Candidates tab**

46. Once all candidate definition is complete, click on the Add button to continue adding races in the election.  At the completion of the last race, click on the OK button.
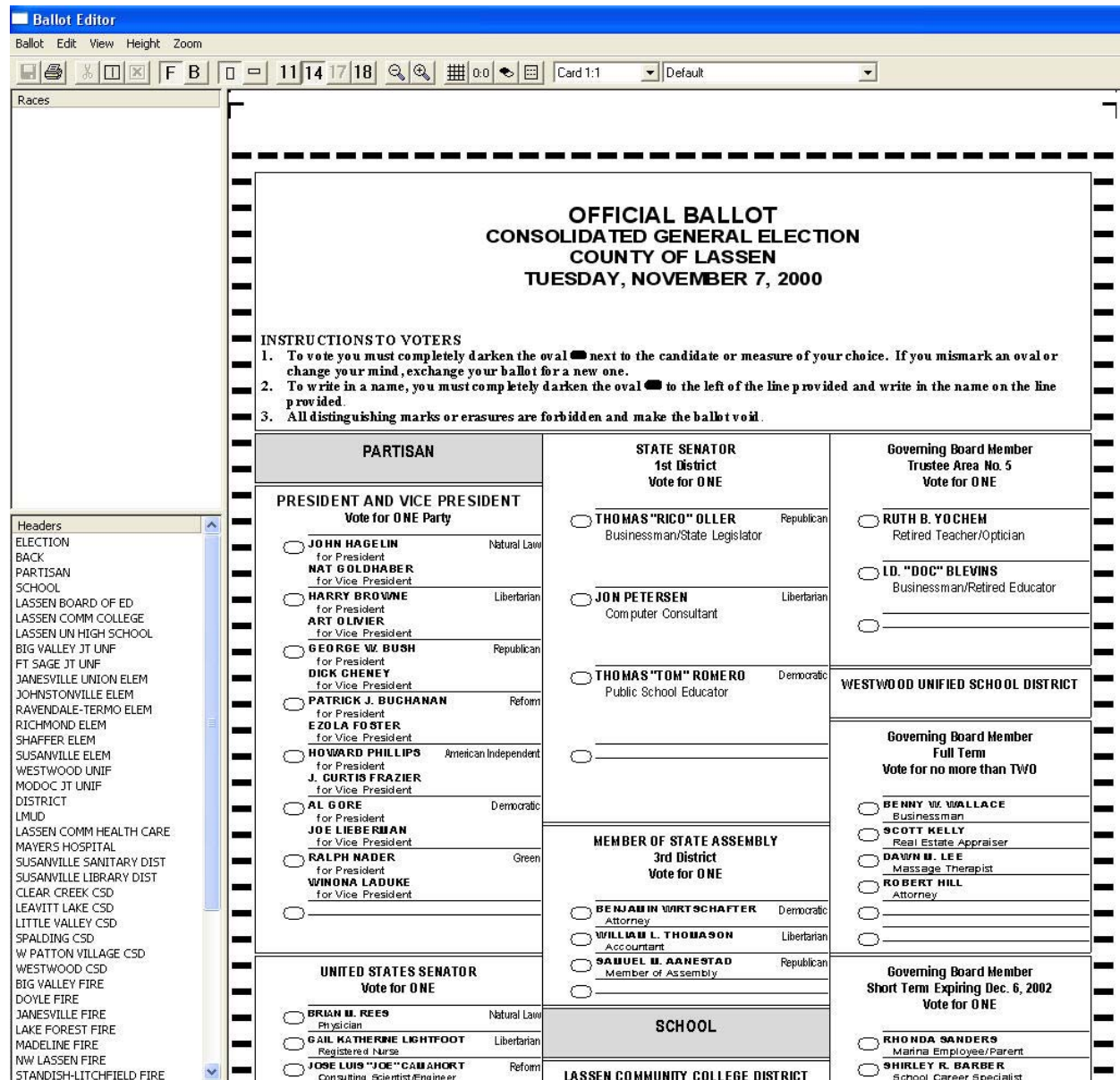
## 5.2.4.   Voter groups

47. For each voter group to appear in the race:

    a.  Select the voter group in the top, right-hand list, and click on the Add button.  The political party now appears in the top, left-hand column.

- Change race and header formatting information

- Alter language-related ballot text

- Save results

The Ballot and Card Editors display AccuVote-OS ballot artwork without precinct identifiers or control marks, such as cut marks.  Note that while ballot artwork appears in AccuVote-OS ballot format only, these editors may also be used to preview AccuVote-TS ballot artwork.

Activate the Ballot Editor by double-clicking on a ballot style or ballot.  Activate the Card Editor by double-clicking on a card style or card.



**Figure 6-21.  Card Editor**

EXHIBIT

G

# IN THE UNITED STATES DISTRICT COURT
## FOR THE NORTHERN DISTRICT OF GEORGIA
### ATLANTA DIVISION

DONNA CURLING, ET AL.,

Plaintiffs,

v.

BRAD RAFFENSPERGER, ET AL.,

Defendants.

Civil Action No. 1:17-CV-2989-AT

## DECLARATION OF J. ALEX HALDERMAN

J. ALEX HALDERMAN declares, under penalty of perjury, pursuant to 28 U.S.C. § 1746, that the following is true and correct:

1. The GEMS database itself is not sensitive and the State should be able to produce it subject to minimal security precautions, such as sending an encrypted copy via email with separate password to follow.

2. GEMS is the Global Election Management System, a Windows application that election workers use to create ballot layouts, program voting machine memory cards, and aggregate election results from multiple voting machines. Data produced and processed by GEMS is stored in a Microsoft Access database file, the GEMS database.

3. Detailed information about the operation of GEMS and the structure of the GEMS database is already part of the public record. Several states make their
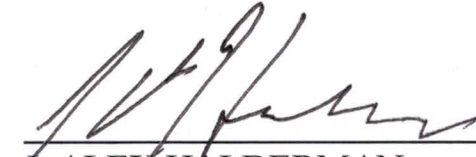
1

GEMS databases public, as a matter of transparency.  The GEMS software itself has been available for download from the website BlackBoxVoting.org for more than 13 years, along with abundant technical documentation about the program.  Experts have published several security analyses that detail vulnerabilities in the GEMS software.  Were information from Georgia's GEMS database to be revealed, it would not create any greater security risk than already exists by virtue of this publicly available information.

4.      Defendants assert that the "structure" of Georgia's GEMS database is unique to Georgia, and that its disclosure would therefore aid attackers.  This reflects a misunderstanding of how election-specific malware can operate.  Malware does not need to be hard-coded for a specific race ID code or candidate number (which might be unique to a particular state).  Instead, it can be programmed to search for the name of a candidate or political party, regardless of how that candidate or party is coded in the database.  In any event, files that appear to be GEMS databases from certain past elections in Georgia have long been available online at http://blackboxvoting.org/docs/diebold/marks-gems-files.zip.      If   there   are characteristics that are unique to all GEMS databases used in Georgia, those characteristics are likely already ascertainable by attackers through analysis of these publicly available files.

2

5.      Examining the GEMS database will allow Plaintiffs to begin investigating whether errors or attacks have impacted past Georgia elections.  Such examination has the potential to uncover a range of problems, including errors in ballot preparation, software bugs and misconfigurations, data corruption, mistakes during tabulation, and certain forms of malicious software.  Any of these problems could have resulted in anomalies in past elections and could recur in future elections.

6.      A review of reports generated by the GEMS software cannot substitute for an examination of the database itself.  These reports contain only a subset of the information contained in the GEMS database.  While the GEMS database is the actual data and coding used to operate the election, the reports are merely an approximate translation and summary, rendered into human-readable form by GEMS itself.  Like any translation, the reports necessarily omit subtleties and nuances that can affect the meaning of the information.  Moreover, since the reports are produced by the GEMS software, errors or malware affecting the GEMS system could cause crucial information to be omitted from the reports.

dc-1104951

I declare under penalty of the perjury laws of the State of Georgia and the United States that the foregoing is true and correct and that this declaration was executed this 1st day of July, 2019 in Ann Arbor, Michigan.

J. ALEX HALDERMAN

dc-1104951